

Self-Compassion and Stress in Saskatchewan Medical Students, Residents, and Attending  
Physicians

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## ABSTRACT

Stress can have a negative impact and is prevalent at high rates in physicians. This research study expands existing research into Saskatchewan physicians and measures the level of stress in medical students, residents, and attending physicians in Saskatchewan. Self-compassion is an emergent topic in the western world and may provide a mechanism to mitigate the experience of stress. This study also measures the level of self-compassion in the same population, and compares the levels of stress to that of self-compassion to determine what, if any, relationship exists. The population targeted is further broken down into males and females, as well as into those in a family medicine, non-surgical specialty, and surgical specialty programs. The total population is collapsed into a final category of Saskatchewan physicians. Data were collected via an online survey using the Perceived Stress Scale-10, the Self-Compassion Scale (short form), and a measure of self-care. Parametric and non-parametric tests used to analyze the data revealed that stress and self-compassion have a statistically significant negative linear relationship for all populations, including when collapsed, with two exceptions: attending physicians, and those in a non-surgical specialty. There was a statistically significant difference in level of stress between residents and attending physicians. Self-care data collected indicate Saskatchewan physicians feel good in their ability to take care of their intellectual and sensual domains, but that they need work in taking care of their physical and spiritual domains. Future research should focus on studying the implementation of different stress reducing mechanisms, targeting both the physicians experiencing stress, along with the systems that physicians work and learn within.

*Keywords:* stress, self-compassion, self-care, attending physician, resident, medical student

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## 1. INTRODUCTION

The professional training and practice of medicine can be uniquely stressful for physicians (Cohen & Patten, 2005; D'Eon, 2014; Rahimi, Baetz, Bowen, & Balbuena, 2014; Shanafelt et al., 2005; Toews et al., 1997). Despite the pervasive negative effects of stress on physicians, stress as experienced by physicians in Saskatchewan has not been adequately investigated. Further, potential mediators of stress in the Saskatchewan physician population have also not received adequate attention. The purpose of this study is to measure the relationship between levels of stress and self-compassion experienced by Saskatchewan medical students, residents, and attending physicians. The concept of self-care will also be investigated, however, without a standardized measure of self-care, the data collected will only be an adjunct to stress and self-compassion. Whether or not individuals participate in teaching medical students and/or residents will be identified, along with their gender. The intent of this research study is to build upon existing research on stress experienced by physicians and increase the knowledge of self-compassion and self-care both in general and as they relate to stress. The rationale, definitions, questions, and significance of this research study will be discussed in the following sections.

### 1.1 Rationale

Stress has been shown to negatively impact physicians as well as the quality of medical care they provide to the public (Firth-Cozens & Greenhalgh, 1997; Shanafelt, Bradley, Wlpf, & Back, 2002). For consumers of health care services delivered by Canadian physicians, the level of stress in physicians is a concern. Stress can lead to lowered levels of physical and mental well-being (Wilkins, 2007). Further, physicians and residents have indicated there is substantial stigma within the culture of medicine to accessing mental health resources (Hassan et al., 2016). The relatively small size of Saskatchewan medical communities may promote closed regions where a physician's personal information is known and shared throughout their community thus creating additional barriers (e.g., a lack of confidentiality) for physicians to access mental health resources. North American research on stress in physician populations has focused on the United States. The limited research on stress in Saskatchewan physicians, along with the foreseen and

unforeseen stressful challenges of medical school, residency, and private practice has prompted me to investigate the levels of stress in medical students, residents, and attending physicians.

As potential mediators for stress, self-compassion and self-care have received limited attention within the Saskatchewan physician population. The possibility that increased self-compassion may buffer the negative experience of stress, by increasing an individual's resilience to negative situations and events, has broad implications for research and practice. The vague and subjective nature of self-care makes it a difficult concept to investigate and research findings will likely not generalize outside of the population investigated. Expanding the concepts of self-compassion and self-care to how they may apply to stress, specifically within Saskatchewan medical students, residents, and attending physicians, may promote additional research into stress and the psychological mechanisms that may mitigate its effects.

## 1.2 Definitions

There are key terms that will be used throughout this paper. Clear understanding of their meaning, within this specific exploration, is important. The definitions provided here are to ensure better understanding of the community and concepts investigated in this study.

**Attending Physician:** A physician who has completed their residency or fellowship program and is practicing medicine in some capacity in the community. They may or may not teach residents or medical students.

**Burnout:** The convergence of “emotional exhaustion, depersonalization, and a sense of low personal accomplishment” (Dyrbye, Shanafelt, Thomas, & Durning, 2009, p. 310). “The appearance of symptoms of burnout increases when there is significant and prolonged occupational stress, such as work overload, coupled with inadequate resources in meeting these stressors, including limited control over one's work, exclusion from important decisions made at the workplace, and lack of a sense of community in the workplace” (Gabbe et al., 2008, p. 476).

**Common Humanity:** “recognizing that suffering and personal inadequacy [are] part of the shared human experience – something that we all go through rather than being something that happens to ‘me’ alone” (Neff, 2015, What is Self-Compassion, para. 6).

**Medical Student:** A current student enrolled in a medical school in a Saskatchewan University.

**Physician:** An individual who has completed medical school and is practicing medicine as a resident, fellow, or attending physician.

**Primary Intervention:** Interventions used when there is no presence of a disease or disorder. The purpose is to protect against the negative effects of a given disease or disorder (U of Ottawa, 2015).

**Primordial Intervention:** Interventions used on groups or communities prior to the emergence of a disease or disorder. The purpose is to remove the ecological factors that predispose individuals of a culture or community to a disease or disorder (U of Ottawa, 2015).

**PSS:** Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983; Cohen, 2015).

**Resident:** A physician who has graduated from medical school and is undergoing additional training through a residency or fellowship program. They may teach other residents or medical students.

**Resilience:** “The process of effectively negotiating, adapting to, or managing significant sources of stress or trauma. Assets and resources within the individual, their life and environment facilitate this capacity for adaptation and ‘bouncing back’ in the face of adversity. Across the life course, the experience of resilience will vary” (Windle, 2011, p. 152).

**SCS:** Self-Compassion Scale (Neff, 2003b).

**Secondary Intervention:** Interventions used when there is a presence of a disease or disorder but symptoms have yet to be seen. The purpose is to stop the specific disease or disorder or at least slow the progression of symptoms; often the earlier the application of a secondary intervention the better the outcome (U of Ottawa, 2015).

**Self-Care:** The process and/or activities of individuals taking care of themselves. Eight domains of self were identified by Virginia Satir (1986) and reused in Lavelle Naylor’s (2012) self-care rating scale. The domains include: intellectual, interactional, emotional, nutritional, sensual, spiritual, physical, and contextual.

**Self-Compassion:** A cognitive state of understanding, acceptance, and compassion in the present moment for one’s self, not dependent on the evaluation of one’s worth or on outcomes. This definition is built on Neff’s (2003a) conceptualization of self-compassion and its three components of self-kindness, common humanity, and mindfulness.

**Stress:** A subjective experience resulting from the convergence of challenging environmental events or situations and the person experiencing them; specifically their personality and emotional style. This definition is based on Derogatis’s (n.d.) interactional model and focuses on the subjective nature of the stress experience and not on specific stressors.

**Stressor:** An event or situation that could provoke the experience of stress.

**Tertiary Intervention:** Interventions used when there is the existence of a disease or disorder and symptoms are clearly present. The purpose is not to stop or remove the disease or disorder but to limit the resulting effects or damage (U of Ottawa, 2015).

### 1.3 Research Question

The main research question to be addressed in this study is: what is the relationship of stress to self-compassion amongst Saskatchewan medical students, residents, and attending physicians? The desire to compare the measured levels of stress and self-compassion in physicians at different stages of their career is based on the assumption that while individuals experience stress differently, self-compassion can mediate the experienced level of stress.

Additional research questions to be explored in this study include:

- What is the relationship of stress to self-compassion amongst females and males?
- What are the relationships of stress to self-compassion amongst those in family medicine, a non-surgical specialty, and a surgical specialty?
- What are the differences in stress between males and females, between medical students, residents, and attending physicians, and between those in family medicine, a non-surgical specialty, and a surgical specialty?
- What are the differences in self-compassion between males and females, between medical students, residents, and attending physicians, and between those in family medicine, a non-surgical specialty, and a surgical specialty?

### 1.4 Significance

The presence of stress in the physician population should be a topic of concern for everyone. For physicians, their families, and the medical community, better quantifying the presence of stress may result in greater acceptance of the phenomenon and its negative impact leading toward greater empathy by and for physicians. Quantifying the presence of stress at varying stages of a physician's career may also result in a greater sense of community within physicians, perhaps decreasing stigma and facilitating easier access to mental health resources along with identifying ideal timing for primary and secondary interventions. For medical schools and the governments that structure the medical system, data on physician stress may inform future support, policy, and mandates. The policies and structures of medical school itself may inadvertently produce and increase the stress and negative wellbeing of medical students before

they ever enter the medical profession (D'Eon, 2014). Changes in support, policy, and mandates may act as primordial and primary interventions, decreasing the toxic aspects of, and barriers in the medical environment as well as increase support for the mental health of physicians. Identifying possible relationships between stress and self-compassion may also reduce the environmental barriers created by the health care system preventing physicians from practicing self-compassion and self-care. For the general population, a decrease in physician stress, and an increase in physician self-compassion, appears to positively affect the physician's work. Possible results of decreased physician stress and increased physician self-compassion that would benefit users of the health care system are: superior patient care, increased empathy for patients, increased diagnostic accuracy, and fewer medical errors (Firth-Cozens & Greenhalgh, 1997; Shanafelt et al., 2002; Shanafelt et al., 2005).

It is clear that the experience of physician stress can impact everyone. Research indicates that stress is a problem for physicians in general, but research specifically on Saskatchewan physicians is limited. Additionally, research into self-compassion is only just beginning to investigate its role on stress in the medical community in general. Identifying the levels of physician stress, self-compassion, and self-care may not only prompt future research in this area but prompt medical communities to support efforts to allow increased self-compassion and self-care.

### 1.5 Summary

Additional research is needed to identify the levels of stress, self-compassion, and self-care in Saskatchewan physicians. Further, connecting these elements to detect potential correlations may produce a clearer understanding of how to prevent or manage stress. The results of this research study will add to the existing research on physician stress and produce new research on the levels of stress, self-compassion, and self-care of Saskatchewan medical students, residents, and attending physicians.

## 2. LITERATURE REVIEW

This literature review was conducted using multiple databases encompassing education, psychology, and medicine. Terms used in the search concentrated on the three elements being studied, the three population categories, and elements such as resilience, burnout, and well-being. Where possible, searches were limited to studies conducted within Canada or including Canadians, published within the last ten years. The literature on stress is abundant; when combined with physicians and Canada, however, the literature narrows. Studies on self-compassion and self-care are also limited. When combined with physicians and Canada, the literature is reduced even further.

First, this review will discuss the effects of stress on the medical community, specifically on medical students, residents, and attending physicians. Gender differences in the experience of stress will be touched upon. The potential consequences for consumers of the health care system resulting from stressed physicians will also be discussed. Self-compassion and self-care will then be assessed as they relate to medical students, residents, and attending physicians. The benefits and potential weaknesses of self-compassion for medical students, residents, and attending physicians, as well as health care consumers will be explored through the existing literature. A brief summary of the stress and self-compassion scales used in this study, also used in the studies referenced in this literature review will be provided. Next, the concept of resiliency will be discussed as a byproduct of self-compassion and a moderator of stress. Finally, the four levels of prevention will be identified as they relate to stress prevention and management.

### 2.1 Stress

The events and circumstances associated with medical training and professional practice can be major stressors (Cohen & Patten, 2005; Rahimi et al., 2014). The experience of stress, however, is more than the mere presence of stressors. Modern theories of stress are often founded on a psychological approach to stress that assumes it is the result of a convergence of elements (Cox, 1993). More specifically, an interactional model of stress states that the experience of stress is the “dynamic interaction between environmental events, personality characteristics and emotional responses” (Derogatis, n.d., *Test Synopses*, para. 1). Further, stress

can have both negative and positive impacts on an individual (Glanz, Rimer, & Viswanath, 2008).

The acceptance of the negative impact that the stressful practice of medicine can have on physicians and the medical system is relatively recent. The growing concern in the late 1990s on the health and well-being of physicians in Canada (Puddester, 2001) led to the development of a policy for physician health and well-being (CMA, 1998). The policy statements are aspirational in nature such as “the relevant institutions and organizations make available adequate financial, human and physical resources to support appropriate health and well-being initiatives for medical students, residents and practicing physicians” (CMA, 1998, p. 2). The policy was later supported by a 2010 mental health strategy for physicians (CMA Board Working Group, 2010). The four directions of the strategy are: increasing awareness, knowledge, and skills for the mental health of physicians; improving access to mental health programs; creating professional and educational environments that encourage mental health; and monitoring the mental health of physicians and the relevant services (CMA Board Working Group, 2010). Taken together, the strategy may act as a foundation to put the policy statements into action. However, the lack of a clear definition for terms such as *adequate* or *appropriate* hinders the realization of the policy. Further, the lack of clear terms under which the policy will be achieved and measured, along with the absence of a tracking mechanism to monitor the effectiveness of both the policy and strategy prevent them from being operational. The over reliance of US and International data on stress and the mental well-being of physicians in support of the 2010 strategy is a limitation. Until all medical schools teach the same program, all resident programs subscribe to the same culture, and all medical systems are structured in the same manner, data outside of Canada maybe not accurately generalize to Canadian physicians.

There is clearly a need for Canadian data. In 2004, Health Canada, the CMA, and other partners joined forces to investigate current physician trends and help outline the pressing issues in Canadian healthcare; thus the National Physician Survey (NPS) (2015) was born. While job satisfaction was included, questions about the general health and well-being of students, residents, and attending physicians was lacking. In the first survey in 2004, physicians were given space to identify what professional activities they found stressful, and residents were asked if they experienced stress that caused them to take action (i.e., medical leave from residency, physician support for depression, or use of medication). Stress was not included in the NPS again

until 2010 and 2012 when medical students alone were asked what specific situations they found stressful. Choices included: own physical health, own mental/emotional health, financial situation, family relationships, discrimination/harassment, course work, clerkships, and choosing a residency program. The highly rated stressors included choosing a residency (30.4% in 2010 and 35.0% in 2012 rated as very stressful) and course work (25.0% in 2010 and 22.7% in 2012 rated as very stressful). Future employment was added as an option 2012 and 21.0% of students rated it as very stressful. Residents on the other hand, were only asked in 2012 how stressed they felt about finding employment after residency. The 2014 NPS survey seems to be the last one administered; the website states that “the NPS project has come to a close” (NPS, 2015, *home page*). Stress has clearly been identified as a concern for Canadian physicians, yet there remains a shortage of substantive research on stress and its effects on Canadian physicians and the Canadian health care system.

Cohen and Patten (2005) cited the top four stressors for medical students and residents as: time pressure, financial situation, own work situation, and residency program. These are large, systemic issues containing elements outside of the medical student or resident’s control. This should place the onus on governing bodies and academic institutions to facilitate change through primordial and primary interventions to support physicians at all levels of their training and professional practice. The policy statements support this onus:

decision-makers in governments, regions and health care facilities consider the potential impact of changes in the health care system on the health and well-being of medical students, residents and attending physicians, and consult and involve them, or their representative bodies, meaningfully in all such changes in the health care system. (CMA, 1998, p. 3)

Governing bodies and academic institutions are responding to this need as demonstrated in the policy (CMA, 1998), strategy (CMA Board Working Group, 2010), the 2012 1<sup>st</sup> Canadian Conference on Physician Health (CMA, 2015a, Website), and the CMA’s Code of Ethics fundamental responsibility to “promote and maintain [the physician’s] own health and well-being” (CMA, 2015b, p. 2). With the limitations to putting policy and strategy into practice, the fact that conference topics have only begun to expand the domain of physician health from specific substance use disorders to include the general health and well-being of physicians, and the notion that only two of the 44 general ethical responsibilities are to physicians themselves,



more work is needed. The focus on the health and well-being of medical professionals is limited, generic, and more often supported by non-Canadian data. These concerns are consistent across Canadian medical codes and policies.

#### 2.1.1 Stress and Attending Physicians

Current research on the stress level experienced by Saskatchewan physicians has been challenging to find. Medical systems, challenges, and expectations can be different in various parts of the world. These differences may negate the generalizability of research outside of Canada to Canadian physicians. We do know that the level of stress experienced by Canadian physicians is higher than the general Canadian population (Wilkins, 2007). Within the medical community, 58-64% of physicians experienced high levels of stress, among the highest within the health care community (Wilkins, 2007). Further, recent research indicates that 1 out of 3 residents in a general surgery program in Canada are at elevated risk for burnout (Adams, Rana, & Christian, 2016).

The stress level of physicians is important for a number of reasons including the belief that stress can lead to low levels of psychological and physiological health. Patients can also be impacted by: physician stress and its consequences (e.g., anxiety, limited sleep, depression, and well-being); impairment of diagnosis and treatment of patients; disruption of a physician's empathic ability; and a higher risk of medical errors (Firth-Cozens & Greenhalgh, 1997; Landrigan et al., 2004; Shanafelt et al., 2002; Shanafelt et al., 2005). Physician dissatisfaction "threatens the well-being of patients" (DeVoe, Fryer, Hargraves, Phillips, & Green, 2002, p. 228).

#### 2.1.2 Stress and Medical Students and Residents

Stress in Canadian medical students and residents is the same or lower than their academic peers using the Social Readjustment Rating Scale (SRRS) and the Symptom Checklist 90 (SCL-90-R) (Toews, Lockyer, Dobson, & Brownell, 1993; Toews et al., 1997). When compared to the general population, their stress level is higher (Rahimi et al., 2014; Toews et al., 1993; Toews et al., 1997). Seventy percent of family medicine residents in BC are experiencing burnout (Rutherford & Oda, 2014). One third of medical residents in Alberta rated their level of stress as a four or five on a scale of five, five indicating the highest level of stress (Cohen & Patten, 2005). Furthermore, 14% of residents in Alberta would think about changing their residency training program (Cohen & Patten, 2005). Worse, 22% would choose another career

altogether if given the chance to remake their career decision (Cohen & Patten, 2005). Producing physicians who are stressed and discontent with their profession, even before entering the professional realm should be concerning for physicians, their families, health care leaders, and health care consumers.

Total stress scores for McGill University medical students were statistically lower than the general population using the Derogatis Stress Profile (DSP) (Helmers, Danoff, Steinert, Leyton, & Young, 1997). The subjective stress scores for the same medical students were actually minimally higher than the general population (Helmers et al., 1997). It is possible that high levels of stress in one domain (environment, personality mediators, and emotional responses) may not have enough weight to impact low levels of stress in other domains, but may be pervasive enough to cause a high level of subjective distress in the individual. Total stress scores may therefore not be as accurate a measure of perceived stress as scores in specific dimensions.

The different research findings for medical students and residents may be due to actual differences in the populations, or they may be due to the use of different stress measurement tools. The DSP used in Helmers et al.'s (1997) study contains 77 questions and assesses eleven main dimensions, categorized into three domains: environment, personality mediators, and emotional responses. The measurement is based on Derogatis's (n.d.) interactional model of stress. In addition to the three domains, the DSP provides a total and subjective stress score. The subjective stress score is assessed separately using a visual analog scale. The Social Readjustment Rating Scale (SRRS), on the other hand, used in Toews et al. (1993) and Toews et al.'s (1997) study looks at external stressors and does not appear to take into account an individual's resilience or coping ability. Despite the presence of external stressors, how an individual manages a stressor is what results in their actual experience of stress. The Symptom Checklist 90 (SCL-90-R), also used in Toews et al. (1993) and Toews et al.'s (1997) study, does a good job of encapsulating the physical stress experience. This measure, when combined with the SRRS, may account for the resilience or coping ability component missing in the SRRS. The SCL-90-R, however, does not appear to have an adequate delineation of whether or not stress is a result of medical school or, for example, a result of a pre-existing presence of depression or anxiety. Finally, the Calgary Stress Questionnaire (CSQ), used in Toews et al. (1993) and Toews et al.'s (1997) study, assessed how impactful specific stressors were did not show much

difference between the populations. A drawback to the CSQ is the limited data on its validity and reliability. Additional research into the efficacy of the CSQ as a measure for stress is required before its results can be relied on. In addition to the limitation of the type of measurement used for stress, a second limitation is that Helmers et al. (1997), Toews et al. (1993), and Toews et al.'s (1997) did not provide a clear definition of stress.

Cohen and Patten (2005) enquired about the experience of intimidation and harassment as a source of stress in Alberta medical residents. Seventy three percent of respondents reported experiencing intimidation and/or harassment. Half of these respondents reported experiencing intimidation and/or harassment more than once. Fifty five percent of respondents reported being on the receiving end of intimidation and/or harassment from nurses, 42% from staff physicians, and 31% from other residents. These numbers seem to indicate that a major source of stress for physicians is the medical community and the health care system itself. In addition, 45% of respondents experiencing intimidation and/or harassment reported patients and their families as a source. More recent research indicates that harassment is prevalent within the medical culture and negatively impacts a physician and their ability to practice (Miedema et al., 2012). While their findings indicate that the majority of harassment happens from patients or their family members, Miedema et al. (2012) suggests that the impact of harassment from colleagues and supervisors is more impactful and longer lasting. Further, their findings suggest four ways in which the “medical culture contributes to the facilitation and perpetuation of abuse in the workplace of family physicians” (Miedema et al., 2012, p. 113): the modeling of harassing and abusive behavior, professional hierarchy, a shortage of physicians, and a lack of policies and follow-up procedures. When one's working environment and clients are a source of intimidation and/or harassment, one's professional product and personal well-being cannot help but be negatively affected.

Toews et al.'s (1997) replication study found great differences in type and perception of stress experienced between Canadian medical students, residents and sciences students at the graduate level. The different types and perceptions of stress found by Toews et al. may explain and support the statistically different scores of symptomology in multiple domains (including: somatization, phobic anxiety, paranoid ideation, and psychoticism) between residents and graduate science students found by Toews et al. (1993). McGill University medical students scored statistically worse than the general population on the specific depression dimension (in

the emotional responses domain) (Helmert et al., 1997). Helmers et al. further reported that an increase in stress level may be present during transitions, from “basic science training to clinical training” (p. 708). This is contrary, however, to Toews et al.’s (1993) findings of a lack of a statistically significant difference in stress level during transition years.

Stress in medical students was shown to be higher than the general population in multiple studies (Cohen & Patten, 2005; Helmers et al. 1997; Rahimi et al., 2014; Toews et al., 1993; Toews et al., 1997). The lack of definition for the concept of stress and the varying measures of stress used, along with the different results (e.g., total stress, subjective stress, transition years) indicate the need for further investigation of stress in medical students and residents both provincially and nationally.

### 2.1.3 Stress and Physicians Who Teach

Many attending physicians and residents engage in teaching activities as part of their salaried position or on a fee for service basis. With the added role of teaching, the physician may face additional stressors, such as new time constraints, a stressor already identified as a concern (Cohen & Patten, 2005). When a physician is placed in a position to guide others, how they manage their stress is modeled for their students. If a physician is struggling to manage their stress, a cycle of negative well-being could be perpetuated through to their students. The concerns discussed in section 2.1.1 with regard to attending physicians and in section 2.1.2 with regard to residents also apply to physicians who teach. Limited research has separated out physicians who engage in teaching activities versus those who do not. While this may signal a gap in the research, it may be the case that all physicians teach.

Stress associated with one’s profession, combined with other elements such as difficulty in managing the stress and lack of control over external professional features can lead to burnout (Gabbe et al., 2008). Burnout as measured by the Maslach Burnout Inventory (MBI) was found in 62% of Canadian and US Internal Medicine Clerkship Directors (Dyrbye et al., 2009) and 2% of Canadian and US medical school deans (Gabbe et al., 2008). It is worthy to note that while only 2% of medical school deans scored high enough to indicate burnout, at least 24% of medical school deans scored high enough to indicate they are at risk of burnout. The difference in burnout rates may be due to the shortened version of the MBI used by Gabbe et al. (2008): 13 of the original 22 items. Further, the difference in burnout rates may also be due to different stressors. Medical school deans listed budget deficits, loss of funding, loss of vital faculty,

institution deficits, dismissal of faculty, and chair disputes as stressors (Gabbe et al., 2008). In fact, 90% of the deans' time was associated with administrative functions (Gabbe et al., 2008). These stressors differ from those indicated by medical students and residents. Deans model behavior for faculty and clerkship directors model behaviors for the students and residents under them. Dyrbye et al.'s (2009) research did not show a correlation between the behavior of teachers and the behavior of students. Miedema et al.'s (2012) research, however, found that one of the four ways the medical system furthers the abuse of physicians is through the modeling of harassing and abusive behavior. Medical students and residents may not receive the support they need to be successful in addition to being taught maladaptive coping mechanisms for stress during their formative years (Dyrbye et al., 2009). Increased levels of burnout result in more teachers agreeing that "[they] don't really care what happen to some of [their] students" and "working with students directly puts too much stress on [them]" (Dyrbye et al., 2009, p. 310).

#### 2.1.4 Gender Differences in Physician Stress

Researchers looking at the stress levels of medical students, residents and attending physicians often discovered that female's experienced higher levels of stress compared to males (Cohen & Patten, 2005; Rahimi et al., 2014; Toews et al., 1993; Toews et al., 1997). Furthermore, more males than females reported stress as a motivating factor (Toews et al., 1997). Explanations for the gender differences in stress levels vary. The treatment of females in the medical community may contribute to the level of stress in females. Harassment and/or intimidation of female residents in Alberta was higher than males: 38% versus 12% (Cohen & Patten, 2005). Existing research also indicates that more female residents experience bullying and general sexism compared to male residents (Cohen & Patten, 2005). Female medical students reported statistically higher levels of depression, anxiety, and subjective stress compared to males, which points to a difference in emotional states between females and males (Helmerts et al., 1997). Additionally, females have lower levels of resilience than their male counterparts, but their coping scores are the same (Rahimi et al., 2014). It is possible that the difference in coping scores between males and females is justified based on the differences in how they experience stressors, support, mental health concerns, emotional states, and resiliency, but not in how they manage them. Finally, Cohen and Patten (2005) questioned if differences in stress between genders was due in part to a reluctance of males to report accurate levels of stress.

The subjective experience of stress by males and females seems to be different. While time pressure is reported as a high stressor across genders, more females than males rated time pressure as a stressor (Cohen & Patten, 2005). Females also reported the amount and complexity of material to be learned in medical school as more stressful than males (Toews et al. 1997). Females further reported managing intimacy in relationships and career as a higher stressor than males along with the multiple demands or roles in their lives (Toews et al., 1993; Toews et al., 1997). Males on the other hand reported the management of the care of their own children as slightly more stressful than females (Cohen & Patten, 2005). Finally, females reported self-expectations and feeling a lack of competence more often as a stressor than males (Toews et al., 1993; Toews et al., 1997).

Contradictory findings on gender differences in the management of stress exist (Cohen & Patten, 2005). Hull et al. (2008) reported that male medical students and residents were more likely to use alcohol and tobacco than their female colleagues, and physicians of both genders. Conversely, Rahimi et al. (2014) reported no differences in coping scales between genders. Where there does appear to be consensus is for the higher potential for, or probability of, lower long-term well-being and higher rates of illness for females versus males under stress (Hull et al., 2008; Toews et al., 1993; Toews et al., 1997).

Existing research seems to use the terms sex and gender interchangeably despite each one defining a different concept. This research study will explore gender differences between men and women with the understanding that research is needed on stress in physicians who may not identify within the culturally defined gender binary.

#### 2.1.5 Summary of Stress

Stress is a factor that everyone must deal with. Research on stress in attending physicians, residents, and medical students has shown that compared to the general population, higher rates of stress are often present. Research has also shown the negative impact both on the individual, as well as on the health care system and its users. Research outside of Canada on physician stress may not generalize to Canada due to the contextual nature of stress and the different medical structures that exist. Existing research on stress in Saskatchewan physicians is limited. Further, research that has been conducted in Canada has included limited response rates, and debated measures. More research is needed in this area.

## 2.2 Self-Compassion

Self-compassion appears to be a relatively new area of study in the Western world. Kristin Neff (2015) has described the construct of self-compassion as having three components: self-kindness, common humanity, and mindfulness (Neff, 2003a). Self-kindness is the ability to treat one's self as they would treat a good and valued friend. Instead of viewing one's self as a solitary being, common humanity is the ability to view one's self as part of a whole: "part of the larger human experience" (Neff, 2003a, p. 89). Finally, mindfulness is the ability to balance negative thoughts and feelings with the larger picture, without "over-identifying with them," preventing the negative thoughts and feelings from taking over (Neff, 2003a, p. 89). Self-compassion has the potential to be a positive framework within which to identify and promote the strengths and positive aspects of individuals (Neff, Rude, & Kirkpatrick, 2007).

Wallace, Lemaire, and Ghali (2009) noted in their review that various researchers have indicated that physicians often do not take time off when they are sick, they self-diagnose, self-prescribe medications, and don't have a primary care physician. As physicians, these behaviors they model are likely not ones they would recommend to their patients. More simply, physicians are not treating themselves as they would like their patients to treat themselves. The behaviors described above seem to indicate low levels of self-kindness in the physician. Further, attending physicians and residents in Canada note that physicians continue working when they are unwell because they are often the only physicians available. This belief may indicate low levels of common humanity. In fact, a limited number of physicians supporting different specialties in medicine are available at any given time. For example, there may be one anesthetist in a town and available over a specified period of time. If a lifesaving surgery is required during that period of time, and the anesthetist is taking a sick day, the lifesaving surgery will not be completed. The anesthetist is forced to choose whether or not to maintain their health at the expense of someone else's life. Due to different staffing levels in different specialties and geographic locations, there may not be another physician to take their place at all. The entire medical structure needs adjustment to provide an environment where physicians could be allowed and in fact supported to increase their experience of common humanity; environments where a physician can take a step back when they need to and not feel responsible to put everyone else first. Finally, the high stress levels experienced by physicians may be an indication of low levels of mindfulness. Over-identification of stressful events and circumstances may be

one of the culprits for increased stress levels in physicians. It is possible that the framework for mindfulness specifically, and self-compassion in general could help prevent and mitigate the experience of stress in, and increase the well-being of, physicians.

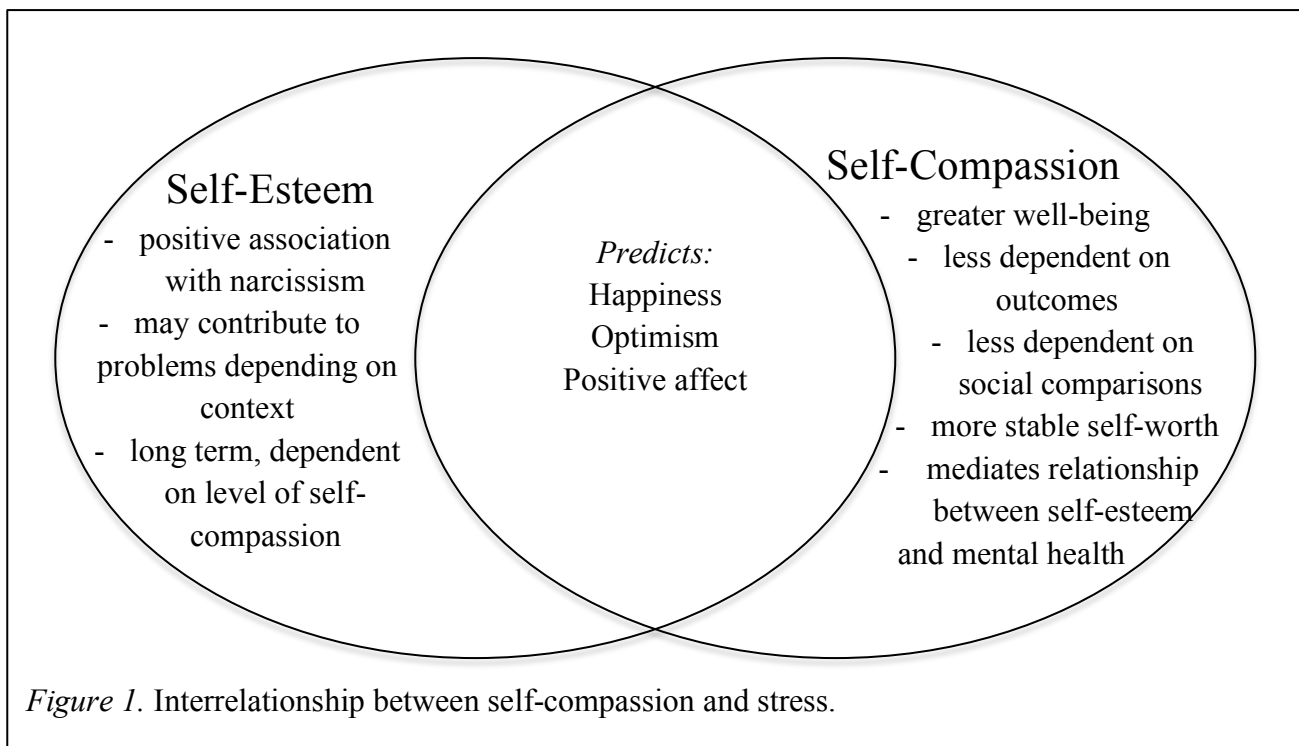
### 2.2.1 Self-Compassion and Well-Being

Multiple studies support a connection between well-being and self-compassion (Leary, Tate, Adams, Allen, & Hancock, 2007). In fact, self-compassion is positively connected to different forms of well-being, including cognitive well-being, psychological well-being, and positive affective well-being, while negatively connected to negative affective well-being (Zessin, Dickhauser, & Garbade, 2015). The strongest relationship was found between psychosocial well-being and self-compassion. These results are supported by previous meta-analysis data on well-being and self-compassion (MacBeth & Gumley, 2012). “[S]elf-compassionate individuals experienced statistically more positive and less negative [moods] generally” (Neff et al.’s, 2007, p. 912). Combined with Shanafelt et al.’s (2005) suggestion that a physician’s well-being can negatively impact their empathic ability, these studies suggest that increased self-compassion may correspond to increased physician empathy. Further, Neff et al. (2007) found a statistically significant positive association between self-compassion and “happiness, optimism, positive affect, wisdom, personal initiative, curiosity and exploration, agreeableness, extroversion, and conscientiousness” (p. 908). More importantly, there is a causal relationship present between self-compassion, and well-being, namely that increasing self-compassion can cause an increase in well-being (Zessin et al., 2015). It should be noted that age, gender, and self-esteem all moderated the connection between self-compassion and well-being (Zessin et al., 2015).

With respect to self-esteem, research suggests that self-compassion is the next iteration of self-esteem, promoting greater well-being than self-esteem (Leary et al., 2007; Neff et al., 2007; Neff & Vonk, 2009; Persinger, 2012). Self-compassion and self-esteem may appear to be the same construct; they both predict “happiness, optimism, and positive affect” (Neff & Vonk, 2009, p. 23). Self-compassion, however, is less dependent on outcomes and social comparisons, and includes more stable self-worth than self-esteem (see figure 1) (Neff et al., 2007; Neff & Vonk, 2009; Marshall, Parker, Ciarrochi, Sahdra, & Jackson, 2015). Self-esteem on the other hand shows a positive association to narcissism (Baumeister, Smart, & Boden, 1996; Neff et al., 2007; Neff & Vonk, 2009) and may actually contribute to problems depending on context



(Marshall et al., 2015). Marshall et al.'s (2015) two-year, longitudinal study using 2448 grade nine and ten Australian students supports Neff et al.'s (2007) assertion that self-compassion and self-esteem are different constructs. Furthermore, it appears that the long-term effects of self-esteem are dependent on the level of self-compassion (Marshall et al., 2015). High self-esteem predicted improved mental health at follow up for individuals with both high and low self-compassion. Self-compassion, however, mediated the relationship between self-esteem and mental health. Individuals with low self-esteem and self-compassion did indeed have decreased mental health at follow up. Individuals with low self-esteem and high self-compassion, however, did not have the same decrease. Self-compassion acted as a buffer against the negative effects of lower self-esteem.



Unfortunately, this researcher did not find studies that explicitly explored a connection between physician stress levels, especially physicians in Canada, and their levels of self-compassion. Though there is support for the connection between self-compassion and well-being, much more research into self-compassion, its specific components, and connection to different aspects of well-being in different populations is still needed.

### 2.2.2 Self-Compassion and Medical Students

The University of Saskatchewan's (U of S) College of Medicine implemented a mindfulness medical practice intervention, a modified version of the mindfulness based stress reduction program (Rac et al., 2016). As one of the components of self-compassion, mindfulness interventions could aid in increasing self-compassion. Those that were randomly selected to receive the intervention showed lower levels of stress, higher levels of resilience, and lower negative coping behaviors post treatment than those that volunteered but did not participate. These differences were not, however, sustained at the one-year follow up. There are multiple possible explanations for why the results did not sustain over time. It is possible that the modified program implemented was not robust enough to produce long lasting effects compared to an 8-week mindfulness based stress reduction program. The 70% of students that self-selected to participate in this study may have been a result of extremely high stress levels. Additionally, the 30% of students who were not interested in participating showed lower levels of stress and negative coping behaviors compared to the interested students who were randomly selected to not receive the mindfulness medical practice intervention. Randomly selecting from this self-selected pool of students may have biased the sample. Further, due to the nature of medical school, the participants who received mindfulness training may not have found time to continue their practice post intervention. Lastly, perhaps the mindfulness training just doesn't work in the long term.

Similar assessment of undergraduate and graduate students in the helping professions in the US showed comparable findings (Newsome, Waldo, & Gruszka, 2012). Unlike Rac et al. (2016), there were no statistically significant differences between post treatment and the follow up one month later. It is unclear if these findings would have held up after a longer period of time. While both Rac et al. (2016) and Newsome et al. (2012) used the PSS-10 to measure stress. Rac et al. used measures of coping and resilience compared to Newsome et al. who used the SCS to measure self-compassion. The differences at follow up may also be due to the different measures used.

More recently, a full Mindfulness Based Stress Reduction program was implemented over three years for medical students in clerkship positions in a Dutch program (van Dijk et al., 2017). Results indicated minimal decreases in psychological distress, "and a moderate increase in positive mental health ... over the course of a 20-month follow-up period" (van Dijk et al.,

2017, p. 7). The above findings signify that in depth research is needed not only on the effects of mindfulness and self-compassion, but on the various methods used to train people in the skills of mindfulness and self-compassion.

### 2.2.3 Self-Compassion and Physicians

Research on health care professionals in general has been used in this review due to the dearth of studies on Canadian physicians and self-compassion. While the existing literature supports self-compassion in the international medical community, it clearly points to a gap in research on self-compassion and physicians nationally and provincially. Health care professionals in the US who receive mindfulness training, one of the components of self-compassion, have statistically higher levels of self-compassion after treatment compared to those who do not receive training (Shapiro, Astin, Bishop, & Cordova, 2005). Further, those health care professionals who receive mindfulness training have statistically significantly lower levels of stress after the treatment compared to those who did not receive training (Shapiro et al., 2005). While Shapiro et al.'s (2005) findings were not followed up at a later date, their initial findings have been supported in the research (Newsome et al. 2012; Rac et al., 2016).

In general, mindfulness training has resulted in lower distress and job burnout, and higher life satisfaction (Shapiro et al., 2005). Further, decreases in experienced stress was predicted by the increase in self-compassion (Shapiro et al., 2005). The same correlation was not found between life satisfaction and self-compassion. Shapiro et al.'s (2005) predictive findings are supported by Zessin et al.'s (2015) meta-analysis, which showed that increased self-compassion causes increased well-being. The small number of participants (38), however, is a limitation of Shapiro et al.'s study. Additionally the study was completed in a small, West Coast, geographic area of the United States. For these two reasons, findings may not generalize to a larger or Canadian population. While physicians were included in Shapiro et al.'s study, nurses, social workers, physical therapists, and psychologists were also included. The low number of participants may have resulted in a physician in neither the treatment nor non-treatment group. Shapiro et al.'s study results, therefore, may not generalize to physicians at all.

A literature review of self-compassion, along with mindfulness, and empathy, among health care workers, specifically nurses, counselors, and health care professionals delivered an overwhelming conclusion in support of self-compassion as a mediator for stress, well-being, self-care, job burnout, and compassion fatigue (Raab, 2014). Raab's (2014) review points to a general

need for further investigation of this phenomenon as well as specifically the need for investigation of Canadian physicians and self-compassion.

#### 2.2.4 The Self-Compassionate Physician and the Medical System Users

*“We don’t see things as they are, we see them as we are” – Anais Nin*

Physicians bring to their practice more than their professional training and experience; physicians bring the totality of their life’s journey. Mindfulness “is integral to the professional competence of physicians” (Epstein, 1999, para. 3). Further, mindful decision making could lead to improved decision making capacity in the future (Epstein, 1999). Conversely, a lack of mindfulness could lead to unprofessional behavior and poor decisions (Epstein, 1999). “This critical self-reflection [mindfulness] enables physicians to listen attentively to patients’ distress, recognize their own errors, refine their technical skills, make evidence-based decisions, and clarify their values so that they can act with compassion, technical competence, presence, and insight” (Epstein, 1999, para. 1).

Lower physician well-being corresponds to lower physician empathy (Shanafelt et al., 2005). A lower level of empathy likely bleeds into multiple areas of the physician’s life: personal and professional. Lower levels of empathy may indicate that a physician is experiencing compassion fatigue, which could lead to a decrease in the quality of care the physician can provide. DeVoe et al. (2002) indicated there was a link between the quality and accessibility of health care and the level of job satisfaction a physician felt. Additionally, specific factors in medical errors can include physician depression, anxiety, and lack of sleep (Firth-Cozens & Greenhalgh, 1997; Landrigan et al., 2004). Poor mental health of physicians can further impede their ability to learn (Girard & Hickam, 1991). With the continual evolution and growth in medical knowledge, it seems imperative that physicians maintain their ability to learn and grow, and apply this knowledge in their practice. A lack of this ability to learn and grow could also lead to misdiagnosis, inaccurate treatment, and outdated medical practices. Furthermore, mental health problems of physicians could obstruct patient care by impacting the physician’s ability to diagnose and treat (Shanafelt et al., 2002).

“When physicians are unwell, the performance of health-care systems can be suboptimum” (Wallace, Lemaire, & Ghali, 2009, p. 1714). Physician wellness can impact patient safety (Firth-Cozens & Greenhalgh, 1997; Shanafelt et al., 2002). However, from a broader perspective, productivity and efficiency in the health-care system could also be negatively

affected by a lack of well-being in physicians. This may translate into longer wait times for patients and higher costs. Employment levels may be impacted by physician well-being (DeVoe et al., 2002; Wallace et al., 2009). Physicians leaving the system temporarily or permanently could also impact patient wait times as well as the general accessibility of services. Physician “stress, burnout or general psychological distress, ... is negatively related to the quality of patient care they provide” (Firth-Cozens & Greenhalgh, 1997; Shanafelt et al., 2002; as cited in Wallace & Lamaire, 2009, p. 545-546).

#### 2.2.5 Self-Compassion Summary

The components of self-compassion have been shown to be positively associated with a physician’s well-being in general and stress levels in particular. This positive association spills over into the physician’s personal life, as well as the patients they treat and the health care system they work within. Limited research exists on this phenomenon in Canada, nationally and provincially. Self-compassion is affected by both age and gender, therefore affecting male and female physicians differently throughout the different stages of their academic and professional lives. Further investigation into self-compassion, specifically within the physician population in Canada is needed.

### 2.3 Self-Care

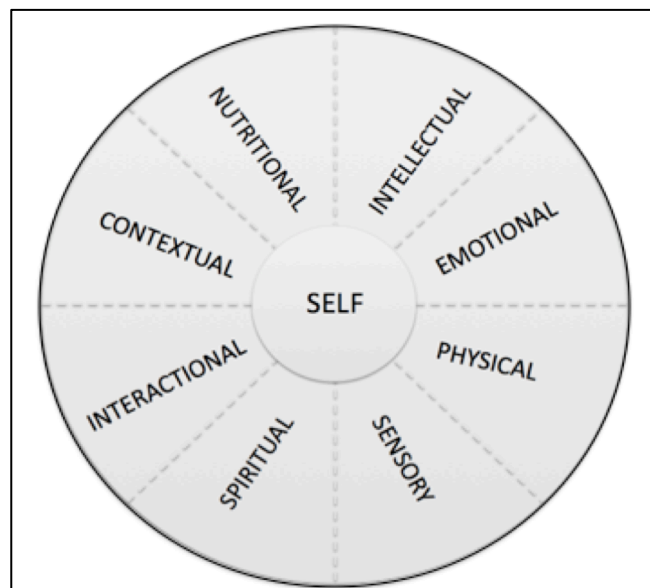
Self-care is a broad, vague, and subjective concept, difficult to measure, with various terms, definitions, and conceptualizations. Self-care can be an instrument for as base a concept as survival, or as philosophical a concept as self-actualization (McCormack, 2003). Despite the variety of understandings, fifteen experts from different disciplines agreed upon four basic self-care characteristics: (a) self care is context and culture specific; (b) self-care entails the ability to actively make choices and put them into action; (c) self-care “is influenced by knowledge, skills, values, motivation, locus of control, and efficacy” (Gantz, 1990, p. 2); and (d) individual control is emphasized over social or institutional control (Gantz, 1990). Within health care, the initial focus of self-care literature was on the transfer of some health care duties from physician to patient, returning some of the power of one’s health back into their own hands (Gantz, 1990).

Lavelda Naylor’s (2012) self-care measurement scale based on Satir’s (1986) eight levels of self will be used in this research study to assess participant’s subjective experience of self-care. Psychometric weaknesses notwithstanding (lack of quantitative research on the proposed domains of self and the measurement tool itself), the scale will be used in this study to assess

attending physicians, residents, and medical students' subjective level of competence in the eight domains of self, along with calculating a total self-care score.

Self-care is a component of Virginia Satir's models and therapies. Satir (1986) began her work in the 1950's as a social worker treating the untreatable. Her work contributed to the foundation for family systems therapy (Banmen, 2002; Corey, 2013; Lee, 2002). She was a cofounder of the Mental Research Institute in California and her models and therapies (e.g., The Satir Change Model, and Satir Transformational Systemic Therapy) continue to be used today by those subscribing to a family systems or humanist/transpersonal perspective in spite of the lack of published explanations for the basis or empirical studies of her theories (Banmen, 2002; Lee, 2002; Satir, 1986). Satir's later writings confirmed her shift in client approach from a "pathology-oriented approach" to a "health-oriented approach" and identified eight domains of health that she thought all individuals ought to address (p. 283). These domains of health have also been referred to as domains of self (Naylor, 2012), a self-mandala, and the wheel of resources (Carlock, 2013) (similar to a medicine wheel) and include: intellectual, interactional, emotional, nutritional, sensual or sensory, spiritual, physical, and contextual domains (see figure 2).

Satir (1986) described the spiritual domain as the force higher than humans, whatever that may be for each individual. In the 80s, Satir described the intellectual domain as left brain thinking and the emotional domain as right brain thinking. In our current age, we may refer to the intellectual domain as our cognition or intellectual processing and our emotional domain as our feelings or emotional processing. The contextual domain is our context, our environment, or external stimuli. Good nutrition, and physical awareness and connection are paramount for good health. The interactional domain refers to our relationships. We are not solitary



*Figure 2. Virginia Satir's conceptualization of the domains of health in relation to the individual.*

beings, we live in relation to others. Finally, the sensory or sensual domain refers to our sense organs, how they work and how we use them. It seems likely that stress in any one of these areas may cause some level of distress for an individual. It is further possible that feelings of competence in any one of these areas may promote resilience and prevent or lower levels of distress. Carlock (2013) used the wheel of resources as a foundation for her training/preparation session with volunteer first responders traveling to New Orleans following Hurricane Katrina. Participation and feedback following the session was so positive, extra sessions were scheduled for additional volunteers. Carlock's work lends support to Satir's conceptualization of human beings.

Lee (2002) created a scale in an attempt to validate the congruence of Satir's (1986) Change Model. Scale items were defined using "observations of the direction of change facilitated in Satir-based workshops, Satir videotapes, and the content of Satir meditations" (Lee, 2002, p. 223). Following refinement of the scale items, 75 Likert scale questions were finalized. Twenty-nine participants were administered the scale in a pilot study, along with a scale for Satisfaction with Life (SWLS), and the Outcome Questionnaire (OQ) for comparison. A further 57 participants completed the scales after refinement following the pilot study. Lee assumed the three scales measured similar constructs and would show a correlation. The Pearson correlation score between the Congruence Scale and the SWLS was 0.53, while the Pearson correlation score between the Congruence Scale and the OQ was -0.61. These scores indicated a moderate correlation, with a significance level of 0.01. While more research is required into Satir's models and theories, Lee's study adds to Carlock's work, and provides support for Satir's constructs.

#### 2.4 Measures of Stress and Self-Compassion

This research is not a replication study. However, the same measures used in this study (SCS (short form) and the PSS-10) along with the alternate versions (SCS (long form) and the PSS-14) have been used in previous research studies. The data collected from past studies used in this paper can be compared to this study's results.

Rahimi et al. (2014) used the PSS-10 in their study and compared their results to US norms (all pertinent findings are reported in Tables 1 and 2). Rac et al. (2014) also used the PSS-10 in their study and reported pre and post treatment means and standard deviations for their three participant groups. Cohen and Janicki-Deverts (2012) used the PSS-10 to assess stress in the general population in 1983, 2006, and 2009. Newsome et al., (2012) used the PSS-10 in their

Table 1.

*Comparative PSS-10 scores*

Authors	Population	Means	SD
Rahimi et al. (2014)	Female study participants	17.41	5.76
	Female US norm	13.70	6.60
	Male study participants	14.65	6.29
	Male US norm	12.10	5.90
Rac et al. (2014)	Treatment-pre	16.90	7.40
	Treatment-post	14.30	6.70
	Waitlist-pre	18.00	6.00
	Waitlist-post	18.70	7.60
	Uninterested-pre	18.20	4.90
	Uninterested-post	14.50	7.20
Cohen & Janicki-Deverts (2012)	Females – 1983	13.68	6.57
	Females – 2006	16.10	7.73
	Females – 2008	16.14	7.56
	Males – 1983	12.07	5.89
	Males – 2006	14.46	7.81
	Males – 2008	15.52	7.44
	Education: Advanced degree – 1983	11.41	5.20
	Education: Advanced degree – 2006	13.23	7.32
	Education: Advanced degree – 2008	14.65	7.14
Newsome et al. (2012)	Pre intervention	21.58	6.75
	Post intervention	15.10	5.83
	Follow up	14.23	5.44
Kemper et al. (2015)	Health Professionals	37.70	Not reported

Table 2

*Comparative SCS (short form) scores*

Authors	Population	Means	SD
Kemper et al. (2015)	Health professionals	17.40	Not reported



study looking at stress and self-compassion. Kemper, Mo, and Khayat (2015) looked at correlations between various factors including stress and self-compassion. They used the SCS (short form) and the PSS-10.

Shapiro et al. (2005) used the 26-point SCS and reported pre treatment levels of self-compassion of 16.48 for the treatment group and 19.51 for the waitlist group. Post treatment levels of self-compassion were 20.15 and 20.07 respectively. The change in self-compassion was statistically significant post treatment. They further reported pre treatment levels of perceived stress of 28.89 for the treatment group and 23.78 for the waitlist group using the 14-point PSS. Post treatment levels were reported as 21.22 and 22.17 respectively. The change in stress was also statistically significant post treatment. Interestingly, a positive change in self-compassion significantly predicted a negative change in stress. Finally, Newsome et al. (2012) used the SCS (long form) and reported that mean levels of self-compassion increased from 2.78 to 3.52, post treatment with a further increase to 3.67 at the one-month follow up.

## 2.5 Resiliency

Resiliency and adaptability are one of the nine core competencies that the Association of American Medical College's Committee on Admissions has listed for prospective medical students (Koenig et al., 2013). Until the medical system is structured to decrease the experience of stress, the high levels of stress present in the physician population points to a need for increased resiliency and stress management skills within physicians. It is possible that an individual's level of resiliency is affected while they are a student and resident. Resiliency may erode over time, decreasing a physician's ability to manage the level of occupational and personal stress they experience. Self-compassion has been shown to increase not only well-being, but an individual's resiliency (Neff, 2003b; Olson, Kemper, & Mahan, 2015), protecting an individual against future stressful events.

Resiliency is a topic of growing importance within the medical community. Rahimi et al. (2014) assessed the levels of resilience, along with stress and coping mechanisms in 155 medical students at the U of S. Their results showed lower levels of resilience and a higher use of negative coping mechanisms than the general population. Between male and female medical students, males had statistically higher levels of resiliency than females. Additionally, female residents showed higher mean levels of depression than males (Girard & Hickam, 1991). These

elements (i.e., coping mechanisms, resiliency, depression) indicate that male medical students may be in a better psychological position to handle stress.

A pilot study showed a strong positive association between self-compassion and resilience (Kemper et al., 2015). Two hundred and thirteen individuals participated in the study. Seventy three percent of the participants were females and 38% of the participants were physicians. With the exception of the PSS-10, scores on all of the measurement scales were similar or nearly identical to the general population; PSS-10 scores were elevated (Kemper et al., 2015). Statistically significant correlations were found between multiple items. Their statistically significant findings suggest that mindfulness and self-compassion may improve an individual's sleep. These findings support Neff's (2003b) conclusion that self-compassion can increase resiliency. Strong positive correlations were found between: sleep and stress; resilience, and good physical and mental health; and mindfulness and self-compassion. Strong negative correlations were found between: stress and good mental health; and stress, and mindfulness and self-compassion. Self-compassion could also predict resilience, even after other factors were controlled (Kemper et al., 2015). These findings support the notion that mindfulness, self-compassion, and resiliency could positively affect one's general well-being, and specifically decrease stress and disturbed or bad sleep.

## 2.6 Health Care Model

The concept of prevention and its different stages is not new to the health care model. The Commission on Chronic Illness (1957) in the United States described two levels of prevention: primary and secondary. These two levels were eventually expanded to include the tertiary level, followed by the primordial level. The concept of these prevention stages is accepted not only in medical circles across the country but in other disciplines as well. The Association of Faculties of Medicine of Canada (n.d.) includes these four levels of prevention in their Chapter 4: Basic Concepts in Prevention, Surveillance, and Health Promotion. Starfield, Hyde, Gervas, and Heath (2007) questioned the relevance of this classification for prevention. Specifically, are theories of prevention useful in the health care system, given that attention is being paid more to diseases and their risk factors than general health? Prevention of specific risk factors may not prevent the targeted disease or indeed improve an individual's health. The authors suggested that a focus on the individual has given way to a focus on the population. The majority of a population is more than 50%. If the focus is on the population, it may suggest that

up to 49% of the population is being left out of prevention strategies. They also suggested that “Increased risk of an event based upon the presence of a ‘predisposing factor’ with high relative risk may no longer be the main criterion for intervention” (p. 581). If the event in question only occurs in a small portion of the population, intervention may not be a priority. They further pointed out that even though relative risk may be the same in different environments, an intervention might not be appropriate in different settings due to different prevalence rates. If these statements are translated into the medical community, specifically medical school, some administrators may believe that the high risk for stress and its negative outcomes may not be enough to justify interventions. For instance, the NPS (2015) survey indicated that roughly 24% of medical students found the course work very stressful. Since roughly three quarters of medical students do not indicate that course work is very stressful, administrators may decide that no changes to course work is necessary. Another barrier to implementing interventions across medical schools may be that any intervention developed may only work in some schools and not in others. Regardless of the current relevancy of prevention theories, consensus seems to support intervention as early as possible (Winzer, 2008). Given the need for early intervention, and the acceptance that stress in the physician population has a diverse and wide spread negative affect, primary and even primordial interventions are called for.

## 2.7 Summary

The literature discussed above clearly describes the problems high stress levels can cause for physicians, their patients, and the medical system. It further identifies the existence of high stress levels within the medical community compared to the general population. Self-compassion has been shown to be an effective framework for managing stress. Self-compassion as discussed, however, is lacking research support within the physician population and in general needs further investigation. Self-care as a concept is not consistently defined and difficult to measure. Existing literature on these topics in Canada is limited. The Canadian studies that have been published report low response rates, different measurement tools, and minimal long term follow up, and include a dearth of data from Saskatchewan. This study aims to fill some of these gaps.

### 3. METHODOLOGY

The research questions included in this study require a quantitative design. The participant pool is assumed to be large enough to capture at least 40 participants in each group (medical student, resident, and attending physician). The target population is assumed to be relatively homogenous, including similar level of education, commitment, and career aspirations. Stress, while a subjective experience, can and has been measured from different perspectives with different instruments. Relating the subjective experiences of self-compassion to stress within the physician population in Saskatchewan has never been conducted. Medicine is generally accepted as an applied science discipline. This researcher has seen that in a professional context, physicians lean more toward numbers than stories. As such, qualitative research from the social sciences may not have as much strength as a quantitative study.. However, in a personal context, this researcher has seen many physicians lean toward stories more than numbers. Due to the busy nature of a physician's work, gathering quantitative data will require a smaller time commitment from participants than gathering qualitative data would. Therefore, a request for participation from physicians and medical students in psychological research may have greater appeal and result in larger numbers of participants using a quantitative approach. Furthermore, quantitative research results may hold greater weight and have greater acceptance within the medical community.

#### 3.1 Participants

Participants were individuals from three specific demographics. The first demographic were students enrolled in an undergraduate medical education program in a Saskatchewan University. Medical school participants were categorized by year where possible. The second demographic were physician residents enrolled in a postgraduate medical education residency or fellowship training program in Saskatchewan. Resident participants were also categorized by year where possible. The third demographic were attending physicians in Saskatchewan. Residents and attending physicians were asked to identify if they are involved in family medicine, a surgical specialty, or a non-surgical specialty. Each domain of practice may have unique stressors that could affect physician stress differently. Residents and attending physicians

were asked to indicate if they participate in training medical students and/or residents. Attending physicians were also asked to identify if they have been practicing for more or less than five years. Residents and attending physicians in Canada note that the addition of self-care as a part of medical training is recent. The purpose for specifying a timeline (more or less than five years) is to capture those for whom self-care was and was not a component of their medical school training. All participants were asked to identify their gender. No other identifying information was requested.

Saskatchewan was chosen as the site for this research for two reasons. The first reason is because the researcher was based in Saskatchewan. Physical recruitment was more easily facilitated in that geographic location. Recruitment will be discussed further below. The second reason is that research on physicians in Saskatchewan is limited. As previously discussed, health care in Canada is provincially managed so the experience of physicians in each province may be different. Saskatchewan may also be unique in that there are a large number of rural and remote populations. Many residents of these rural and remote locations must travel to larger cities to access medical care. This may change the experience of physicians from those working in urban settings with a mainly urban patient population. Research conducted in each province and territory may provide more accurate information, instead of generalizing data from one province to the entire country.

Capturing the stress level of physicians at multiple points throughout their career will help to detect if stress levels are different through a physician's life. Understanding if and when stress increases may lead to targeted primordial and primary interventions thus preventing not just managing stress. Further, assessing the levels of self-compassion and self-care and if they may be different at different stages of a physician's life will give a greater overall understanding of self-compassion and self-care and how they impact stress. Asking participants to identify if they engage in teaching medicine will not only provide additional information as to what behaviors are being modeled for new doctors but also identify if teaching adds another level of stress to the already stressful physician environment. Finally, as previously discussed, there are gender differences in levels of stress and self-compassion. Identifying gender in this study may support the existing literature, while also combining the concepts of stress, self-compassion, and self-care between genders.

### 3.1.1 Participant Recruitment

A request was made to the U of S to send out a generic email notice to students and faculty through institutional networks appealing to participants. The email included the recruitment poster. A draft copy of the poster is attached in Appendix A. A request was made to Colleges of Medicine for their assistance in appealing for participation from their students, residents and faculty. Additionally, requests were made for this researcher to attend the first five minutes of different medical classes at the U of S to present the rationale for the research and request student and faculty participation. Presentations were requested during September and October, 2016. Posters were created and posted at hospitals and medical centres to appeal to medical residents and attending physicians. A draft copy of the poster is attached in Appendix A. The provincial medical association was contacted for additional support in reaching out to physicians for their participation. Possible support might include: contact information for members, dissemination of the recruitment poster to their members, presentations at hospitals and clinics to discuss the rationale for the research and appeal for participation, and brainstorming assistance on how to reach and appeal to physicians. This researcher contacted residency program wellness coordinators and requested time with them and their residents to discuss participation in this study and the potential benefits. This researcher contacted clinics to discuss the benefits of and request participation in this study. This researcher also sent a request for participation to friends and family who are physicians in Saskatchewan. There is recruitment overlap built in to the recruitment process to capture well-intentioned procrastinators.

The appeal to medical students, residents, and attending physicians included not only the purpose of this research study, but this researcher's personal desire to contribute to improving the medical system for physicians; to better support physician well-being and highlight the need for systemic primordial and primary interventions instead of focusing on secondary or tertiary interventions.

Small incentives were offered to medical students and residents upon completion of the survey. Ten, five dollar gift cards to Tim Horton's were available to medical students and ten, five dollar gift cards to Tim Horton's were available to residents. Following the receipt of 20 responses, a draw for two gift cards for medical students and two gift cards for residents was conducted. These draws continued at the end of each week for a total of five weeks. Everyone who completed the survey at the time of the draw, and not previously won a gift card, were eligible for the weekly draw. The structure of the incentive draws was designed to entice not

only participation, but also participation early on to increase the odds of winning a gift card. This researcher assumed that these small incentives would not provide the necessary appeal to attending physicians and therefore no incentive was offered to physicians. To facilitate the draw, at the end of the survey, participants were invited to submit their email address through a separate, unconnected survey. A copy of this separate survey is provided in Appendix B. The email addresses provided by the participants were not connected to the original survey responses. Winners were then asked the best method for them to receive the gift card. Possible methods included mail, in person, or facilitated by their College of Medicine.

### 3.2 Materials

Physicians already face the pressure of time to complete their daily workload (Cohen & Patton, 2005). Therefore asking for any time commitment from a medical student, resident, or attending physician may have been more than they could provide. As such, the measures for this research study needed to be succinct and easy to complete, requesting the least time commitment from participants as possible. Short, online surveys, therefore, were thought to likely garner the largest response rate. As the measures were administered online and anonymous, they were self-reports. Copyright and cost was also a concern. Disseminating questions through an online survey required prior approval from the test creators, which was granted. Due to the limited funding for this project, it was also important to find low or no cost methods to reach participants and measure the three concepts in this study: stress, self-compassion, and self-care. A pdf copy of the survey is attached in Appendix C.

#### 3.2.1 Stress Measurement

Multiple methods and scales have been developed to measure different aspects of stress. Some, like the Social Readjustment Rating Scale, measure the objective experience of stress using a checklist of stressful situations (Holmes & Rahe, 1967, as cited in Amirkhan, 2012). The unfortunate aspect of this type of rating scale is that it assumes the level of stress experienced by all individuals given specific circumstances. For example, the death of a spouse may be considered a high stressor and thus produce high levels of stress. This viewpoint, however, does not take into account other variables such as resiliency, or how effective or ineffective an individual's coping mechanisms are. This research study is not trying to measure stressful events, or define what is or is not stressful. Stress is contextual and subjective. Therefore, this study's focus is to measure participants' perceived level of general stress. It should also be noted

that this research is assumed to be on a non-clinical population. A clinical population is often a group of individuals who have the same or similar diagnosis. This research is not attempting to identify and diagnose depression, anxiety or any other clinical mental health problem.

Hybrid measures of stress combine the objective stressor or environmental event, with the subjective experience of that stressor (Amirkhan, 2012). While the hybrid tests that Amirkhan (2012) reported on have strong reliability and moderate to strong validity in specific areas, their length (between 58 and 117 question/checklist items) precludes their inclusion in this research project. Subjective measures of stress focus solely on an individual's perceived impact of stress (Amirkhan, 2012), which is the focus of this research study. Thus, the shortest reliable and valid measure to assess the subjective experience of stress for a non-clinical population is the Perceived Stress Scale (Cohen et al., 1983). The 10-item PSS scale (Cohen, 2015) was developed from the original 14-item scale (Cohen et al., 1983). The 10-item PSS asks participants how they have felt over the past month for ten items using a 5-point scale. The five points range from *never* to *very often*. The ten items are “designed to tap how unpredictable, uncontrollable, and overloading respondents find their lives” (Cohen & Janicki-Deverts, 2012, p. 1323). Cohen and Janicki-Deverts (2012) indicated internal reliability between .78 and .91 from three samples (i.e., 1983, 2006, & 2009) on the PSS-10. This internal reliability indicates strong support that the PSS does measure the subjective level of stress. The 10-point scale questions are provided in Appendix D.

### 3.2.2 Self-Compassion Measure

Neff (2015) is at the forefront of self-compassion research and developed the Self-Compassion Scales. The short form of the Self-Compassion Scale, used in this study, correlates almost exactly with the long form ( $r \geq 0.97$ ) (Raes, Pommier, Neff, & Van Gucht, 2011). Raes et al. (2011) also reported a Cronbach's alpha of  $\geq 0.86$  for internal consistency. In brief, the short form of the Self-Compassion Scale is as valid and reliable a measure as the original long form. Neff's (2003b) original research into the long form Self-Compassion Scale indicated that the scale had “good construct validity” noting that responses were indicative of self-compassion and not impacted by the social desirability phenomenon (Neff, 2003b, p. 234). Convergent validity was evident by the negative relationship between self-compassion and self-criticism, and the positive relationship between self-compassion and social connectedness (Neff, 2003b). Neff also reported content validity through participant's ability to assess their level of self-compassion for



themselves as well as their self-compassion toward others. Neff did find a moderate correlation between self-compassion and self-esteem. These results, however, also indicated that self-compassion and self-esteem were “different psychological phenomena” (Neff, 2003b, p. 241). This assertion is supported by research conducted by Leary et al. (2007), Marshal et al. (2015), Neff et al. (2007), Neff and Vonk (2009), and Persinger (2012). Neff’s original trial included retesting individuals three weeks later. Results from the second test supported test-retest reliability. Neff’s research indicated that both the long form and short form Self-Compassion Scales are psychometrically sound tools to measure self-compassion. The short form Self-Compassion scale questions are provided in Appendix E.

### 3.2.3 Self-Care Measure

Varying definitions of self-care have prevented the creation of a valid and reliable measurement tool. Self-care in this paper relates to how an individual takes care of their general wellbeing. Lavelda Naylor (2012) posted online a self-report rating scale using Virginia Satir’s domains of health: intellectual, interactional, emotional, nutritional, sensual, spiritual, physical, and contextual. The rating scale is simple and easy to use. Participants provide subjective scores on each domain using a 5-point rating scale between 1 (*needs work*) and 5 (*excellent form*). The Self-Care Rating Scale is provided in Appendix F. As previously noted, there are psychometric weaknesses with the Self-Care Rating Scale (lack of validation of the eight domains of health, and the measurement tool itself). The results will be used in relation to stress and self-compassion scores.

## 3.3 Procedure

This researcher recruited and collected data for this research study. The voluntary nature of participation in this study was emphasized during the informed consent process. The three measures used in this survey were combined along with demographic questions using the U of S’s [www.fluidsurveys.com](http://www.fluidsurveys.com) account. Fluidsurveys is an online platform to create and administer surveys. The anonymous information collected is stored on a secure Canadian server. Online platforms that store data on US servers open the data collected to US laws and inspection. This researcher was the only person that had access to the data collected. Data was compiled using mechanisms provided by fluidsveys before data analysis using SPSS. No identifying information was collected from participants, therefore coding for confidentiality was not

required. It was not possible for anyone to connect participant responses with participants. Data was actively collected during the fall of 2016.

### 3.4 Data Analysis

Frequencies were run on categorical variables: gender, population category, and medical specialty. Descriptive statistics were calculated for levels of stress, self-compassion, and self-care. Pearson's  $r$  was calculated along with regression  $r$  to determine the potential correlations between levels of stress and self-compassion. A significance level of  $p \leq 0.05$  was used.  $t$  tests were used to measure the differences in levels of stress, self-compassion, and self-care individually between gender, population category, and medical specialty.

### 3.5 Ethics

This research study was considered to pose minimal risk to participants. The Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (Canadian Institutes of Health Research, 2014) was followed. The scales that were used are designed to measure components already known to participants. The level of involvement and time commitment from participants is minor. Participant responses were not associated with personally identifying information. The U of S's Research Ethics Board granted approval for this research on August 12, 2016. An Operational Approval from specific Health Regions was not required. Informed consent for participation in the study was included in the appeal for participation. Informed consent was also undertaken before beginning the online survey. Information provided included: the purpose of the research study, how information would be collected and stored, and what measures would be used and why. The research findings will be provided to the U of S with the aim of improving medical students and residents' experience. This was conveyed to participants during the informed consent process. The elements in this research may have resulted in discomfort for participants depending on their experiences with stress, self-compassion, and self-care. Following the completion of the survey, information on mental health resources was provided for all. A copy of the informed consent form is included in the survey attached in Appendix C.

## 4. RESULTS

This chapter will report and discuss the results of the study. Demographic data will be reported, followed by the descriptive statistics and then an analysis of the inferential statistics. The results will be further discussed and interpreted in Chapter Five.

### 4.1 Demographic Information

A total of 135 individuals responded to the online survey (demographic data is provided in Table 3. Twelve of the respondents did not provide complete demographic information nor did they complete the stress, self-compassion, or self-care survey questions. As such, these 12 responses were removed from the data pool leaving 123 responses (69 female, 53 male, 1 did not identify). Of the 123 responses, 52 were medical students, 56 were medical residents, and 15 were attending physicians. Of the physicians, eight had been practicing medicine for less than five years and seven had been practicing medicine for more than five years. From the resident

Table 3.

*Demographic information*

	Medical Student	Medical Resident	Attending Physician	Residents & Attending Physicians	Total
Female	29	33	7		69
Male	22	23	8		53
Unidentified	1				1
Practicing < 5yrs			8		
Practicing > 5yrs			7		
All Attending Physicians					15
Family Medicine				20	
Non-Surgical Specialty				33	
Surgical Specialty				18	

and physician pool of responses, 20 were in family medicine, 33 in a non-surgical specialty, and 18 in a surgical specialty. Sixty-seven of these individuals identified that they were engaged in teaching activities while only three did not. One individual did not identify whether or not they taught. Year of study was collected from both medical students and residents, however, due to the response rate, disclosing this information may inadvertently compromise the anonymity of participants. Year of study, therefore, has been excluded from the study.

## 4.2 Descriptive Statistics

In this section, the responses to the three measures, the 10-item Perceived Stress Scale, the Self-Compassion Scale (short form), and the Self-Care Rating Scale will be discussed in general.

### 4.2.1 Perceived Stress Scale

The PSS-10 scores are calculated by reverse scoring the positive item questions, then summing all of the scores from the 10-items. Scores could range from 0 to 40 with a higher score indicating higher levels of perceived stress. The 123 responses ranged from 4 to 32 with a mean score of 19.00 ( $SD = 6.15$ ). Perceived Stress Score data is provided in Table 4. Female scores ranged from 4 to 31 with a mean score of 19.58 ( $SD = 6.09$ ) while male scores ranged from 6 to 32 with a mean score of 18.43 ( $SD = 6.13$ ). Medical Student scores ranged from 4 to 31 with a mean score of 18.23 ( $SD = 6.55$ ); Medical Resident scores ranged from 6 to 32 with a mean

Table 4.

*Perceived stress scores*

	Score Range	Mean Score	<i>SD</i>	<i>n</i>
Total	4 – 32	19.00	6.15	123
Female	4 – 31	19.58	6.09	69
Male	6 – 32	18.43	6.13	53
Medical Students	4 – 31	18.23	6.55	51
Medical Residents	6 – 32	20.41	5.60	56
Attending Physicians	9 – 28	16.40	5.74	15
Family Medicine	9 – 28	19.15	6.50	20
Non-Surgical Specialty	6 – 29	19.45	5.97	33
Surgical Specialty	13 – 32	20.22	5.01	18

score of 20.41 ( $SD = 5.60$ ); and Attending Physician scores ranged from 9 to 28 with a mean score of 16.40 ( $SD = 5.74$ ). Finally, Family Medicine scores ranged from 9 to 28 with a mean score of 19.15 ( $SD = 6.50$ ); Non-surgical specialty scores ranged from 6 to 29 with a mean score of 19.45 ( $SD = 5.97$ ); and Surgical specialty scores ranged from 13 to 32 with a mean score of 20.22 ( $SD = 5.01$ ).

#### 4.2.2 Self-Compassion Scale

The SCS (short form) scores are calculated by reverse scoring the negative item questions, summing all of the scores from the 12-items, and then calculating a total mean. Scores could range from 1 to 5 with a higher score indicating higher levels of self-compassion. The 123 responses ranged from 1.50 to 4.67 with a mean score of 2.96 ( $SD = 0.73$ ). Self-Compassion score data is provided in Table 5. Female scores ranged from 1.50 to 4.67 with a mean score of 2.86 ( $SD = 0.73$ ) while male scores ranged from 1.83 to 4.58 with a mean score of 3.11 ( $SD = 0.72$ ). Medical Student scores ranged from 1.92 to 4.67 with a mean score of 2.97 ( $SD = 0.76$ ); Medical Resident scores ranged from 1.50 to 4.67 with a mean score of 2.88 ( $SD = 0.72$ ); and Attending Physician scores ranged from 2.42 to 4.50 with a mean score of 3.25 ( $SD = 0.69$ ). Finally, Family Medicine scores ranged from 1.58 to 4.67 with a mean score of 3.19 ( $SD = 0.88$ ); Non-Surgical specialty scores ranged from 1.50 to 4.50 with a mean score of 2.87 ( $SD = 0.64$ ); and Surgical specialty scores ranged from 1.75 to 4.00 with a mean score of 2.87 ( $SD = 0.65$ ).

Table 5.

*Self-compassion scores*

	Score Range	Mean Score	<i>SD</i>	<i>n</i>
Total	1.50 – 4.67	2.96	0.73	123
Female	1.50 – 4.67	2.86	0.73	69
Male	1.83 – 4.58	3.11	0.72	53
Medical Students	1.92 – 4.67	2.97	0.76	51
Medical Residents	1.50 – 4.67	2.88	0.72	56
Attending Physicians	2.42 – 4.50	3.25	0.69	15
Family Medicine	1.58 – 4.67	3.19	0.88	20
Non-Surgical Specialty	1.50 – 4.50	2.87	0.64	33
Surgical Specialty	1.75 – 4.00	2.87	0.65	18

#### 4.2.3 Self-Care Rating Scale

The Self-Care Rating Scale is essentially a Likert rating scale in eight domains. Responses in each domain constitute ordinal data. Descriptive statistics of this ordinal data will, therefore, be presented. The answers could range from 1 (*needs work*) to 5 (*excellent form*) in each of the domains. The 123 responses ranged from 1 to 5 in each domain. The mode score was three in all domains with three exceptions. The mode score for the physical domain was 2, while the mode score for the intellectual and sensual domains was 4. The mode scores for each domain split by gender indicated slightly different scores between males and females. Domain scores for self-care, including modes are provided in Table 6 and 7.

Table 6.

*Self-care scores in each domain*

	Score range	Mode score
Intellectual	1 - 5	4
Interactional	1 - 5	3
Spiritual	1 - 5	3
Nutritional	1 - 5	3
Emotional	1 - 5	3
Sensual	1 - 5	4
Physical	1 - 5	2
Contextual	1 - 5	3

Table 7.

*Self-care mode scores in each domain split by category*

	Female	Male	Medical student	Resident	Attending physician	Family medicine	Non-surgical specialty	Surgical specialty
Intellectual	4	4	4	4	5	3	4	4
Interactional	3	4	4	3	3	4	3	3
Spiritual	3	2	3	2	1	2	2	3
Nutritional	4	3	3	2	2	2	2	3
Emotional	3	3	4	3	4	3	3	3
Sensual	4	4	4	4	3	4	4	3
Physical	2	2	2	2	1	1	3	1
Contextual	3	3	3	3	3	3	3	3

For the purposes of this study, each domain of self-care is assumed to be equally weighted. That is, each domain contributes to the health of an individual and no one domain is more important than another. Since the two main measures in this study (stress and self-compassion) generated a mean score, an average (mean) self-care response was calculated for each individual using the eight domains for comparison to stress and self-compassion. While there is disagreement over Likert scale responses being categorized as discrete or continuous variables, the average self-care responses have been treated as a continuous variable for the purposes of comparison. Scores could range from 1 to 5 with a higher score indicating higher levels of self-care. The 123 responses ranged from 1.63 to 4.88 with a mean score of 3.07 ( $SD = 0.69$ ) (Overall self-care data are provided in Table 8). Female scores ranged from 1.63 to 4.13 with a mean score of 3.03 ( $SD = 0.64$ ) while male scores ranged from 1.63 to 4.88 with a mean score of 3.13 ( $SD = 0.75$ ).

Table 8.

*Self-care scores*

	Score range	Mean score	$SD$	$n$
Total	1.63 – 4.88	3.07	0.69	123
Female	1.63 – 4.13	3.03	0.64	69
Male	1.63 – 4.88	3.13	0.75	53
Medical Students	1.63 – 4.88	3.05	0.70	51
Medical Residents	1.63 – 4.25	3.04	0.63	56
Attending Physicians	1.75 – 4.88	3.23	0.86	15
Family Medicine	1.63 – 4.13	3.05	0.55	20
Non-Surgical Specialty	1.75 – 4.88	3.08	0.77	33
Surgical Specialty	1.75 – 4.25	3.13	0.70	18

Medical Student scores ranged from 1.63 to 4.88 with a mean score of 3.05 ( $SD = 0.70$ ); Medical Resident scores ranged from 1.63 to 4.25 with a mean score of 3.04 ( $SD = 0.63$ ); and Attending Physician scores ranged from 1.75 to 4.88 with a mean score of 3.23 ( $SD = 0.86$ ). Finally, Family Medicine scores ranged from 1.63 to 4.13 with a mean score of 3.05 ( $SD = 0.55$ ); Non-Surgical specialty scores ranged from 1.75 to 4.88 with a mean score of 3.08 ( $SD = 0.77$ ); and Surgical specialty scores ranged from 1.75 to 4.25 with a mean score of 3.13 ( $SD = 0.70$ ).

### 4.3 Statistical Analysis

The following sections discuss how the data in this study was management and analysed. A brief discussion of how the required assumptions were met in order to proceed with data analysis is included. Finally, parametric and non-parametric results are reported.

#### 4.3.1 Data Screening

Once data were exported from Fluid Surveys into SPSS, individual answers were coded and simplified from the original survey questions for analysis. Responses with multiple blanks were deleted and removed from the data pool.

#### 4.3.2 Missing Data

Outside of the responses that were all or mostly blank and subsequently removed, one person did not identify their gender. This response was therefore not included in gender comparisons. One resident did not identify if they taught. Since all but three residents and attending physicians indicated that they did teach, this variable was not included in the data analysis. Finally, five questions were not answered: three from the Self-Compassion Scale and two from the Perceived Stress Scale. The five questions that were not answered were from separate individuals. Initial analysis of the entire data pool suggested a strong, negative, linear, correlation between stress and self-compassion. As such, the unanswered questions were scored as a zero and all respondents were included. There was no discernable pattern to the missing answers and it is unclear if individuals opted to not answer these questions or if they were accidentally missed or forgotten.

#### 4.3.3 Distributions

Before proceeding with analysis of the data, three assumptions were investigated: independent data, homoscedasticity, and a normal distribution of data (Howell, 2013). Participants were randomly chosen in that participants were recruited and were free to independently participate or not which satisfies the first assumption for independence of data. Homoscedasticity was determined by conducting a Levene's tests on stress, self-compassion, and self-care. Even when the data were split by gender, population category, and medical specialty, all results indicated homogenous variance. Normality of the data was confirmed using the Shapiro-Wilk test. This test "has more power to detect differences in normality" than the Kolmogorov-Smirnov test (Field, 2009). The Shapiro-Wilk tests indicated normality for all data sets with two exceptions: self-compassion for all respondents ( $D(123) = 0.973, p < 0.05$ ), and



self-compassion in medical students ( $D(52) = 0.939, p < 0.05$ ). Based on the three assumptions above, parametric tests will be used for all comparisons except for all self-compassion, and self-compassion in medical students. Additionally, skew was investigated for stress, self-compassion, and self-care. Skew for stress was -0.084, 0.423 for self-compassion, and 0.130 for self-care. All three skew measures were less than  $|0.50|$ , therefore the data were determined to be generally symmetrical (McNeese, 2016).

#### 4.3.4 Parametric Correlations

Two-tailed Pearson correlation coefficients ( $r$ ) were calculated to measure the relationship between stress and self-compassion under different demographic circumstances. When analyzing human behavior, a strong correlation is achieved when  $r$  is greater than 0.50, moderate when between 0.50 and 0.30, and small when between 0.30 and 0.10 (Cohen, 1988). The correlation between stress and self-compassion when broken down by gender was statistically significant, strong, and negative for both females and males: females  $r(69) = -0.548, p < 0.00$ , and males  $r(53) = -0.570, p < 0.00$ . A statistically significant, strong, and negative correlation was also found between stress and self-compassion in residents ( $r(56) = -0.516, p < 0.00$ ). This was not the case for physicians ( $r(15) = -0.26, p > 0.05$ ). The low number of physicians, however, may have biased the sample and produced inaccurate results. A statistically significant, strong, and negative correlation was likewise found between stress and self-compassion for those in family medicine ( $r(20) = -0.567, p < 0.01$ ) and those in a surgical specialty ( $r(18) = -0.683, p < 0.01$ ). This was not found for those in a non-surgical specialty ( $r(33) = -0.252, p > 0.05$ ).

With varying sample sizes for each of the populations, some of which were less than 20, the meaningfulness of the correlations found above may come into question. As such, the power for each correlation was calculated using an online calculator from: <https://www.anzmtg.org/stats/PowerCalculator/PowerCorrelation>. The calculated power for the correlations recorded for females, males, medical students, and residents was  $\delta > 0.99$ . The power for those practicing in a surgical specialty was  $\delta = 0.86$ . These results indicate that there is a greater than 86% chance that statistically significant results will be found if they are present. For those practicing in family medicine, the calculated power was  $\delta = 0.77$  which may not indicate a strong reliance on the correlation results. Finally, the power statistic for those practicing in a non-surgical specialty was  $\delta = 0.13$  and  $\delta = 0.04$  for Physicians. These results

indicate that the non-statistically significant correlations did not have enough power. Correlational analyses comparing stress and self-compassion are provided in Table 9.

Table 9.

*Pearson' r scores for stress and self-compassion*

Stress	Self-compassion							<i>p Value</i>	Power $\delta$
	Male	Female	Resident	Attending Physician	Family Medicine	Non-Surgical	Surgical		
Male	-0.570							0.000	1.00
Female		-0.548						0.000	1.00
Resident			-0.516					0.000	0.99
Attending Physician				-0.026				0.928	0.04
Family Medicine					-0.567			0.009	0.77
Non-Surgical						-0.157		0.157	0.13
Surgical							-0.656	0.000	0.86

The differences in the mean levels measured in this study (stress, self-compassion, and self-care) were compared across various demographic variables (gender, population category, and medical specialty) using independent *t* tests. While stress, self-compassion, and self-care scores varied across demographic variables, only one of the population categories had a statistically significant result (specific values are provided in Tables 10, 11 and 12). The difference in stress between residents ( $M = 20.41$ ,  $SE = 0.75$ ) and attending physicians ( $M = 16.40$ ,  $SE = 1.48$ ) was statistically significant,  $t(69) = 2.45$ ,  $p < 0.05$ . Effect size *r* was calculated for the difference between the various means using an online calculator at:

<http://www.uccs.edu/~lbecker/>. The statistically different scores in stress between residents and

Table 10.

*Comparisons of scores between females and males*

Variables	Female		Male		<i>t</i> Test	<i>p</i> Value	<i>effect size r</i>
	Mean	<i>SD</i>	Mean	<i>SD</i>			
Stress	19.58	6.09	18.43	6.13	1.027	0.306	0.093
Self-Compassion	2.86	0.73	3.11	0.72	-1.831	0.070	0.165
Self-Care	3.03	0.64	3.13	0.75	-0.840	0.402	0.076

Table 11.

*Comparisons of scores between medical students, residents, and attending physicians*

Variables	Medical Students		Residents		Attending Physicians		<i>t</i> Test	<i>p</i> Value	<i>effect size r</i>
	Mean	SD	Mean	SD	Mean	SD			
Stress	18.23	6.55	20.41	5.60			-1.864	0.065	0.178
			20.41	5.60	16.40	5.74	2.453	0.017	0.283
	18.23	6.55			16.40	5.74	0.978	0.332	0.120
Self-Compassion			2.88	0.72	3.25	0.69	-1.788	0.078	0.210
Self-Care	3.05	0.70	3.04	0.63			0.044	0.965	0.089
			3.04	0.63	3.23	0.70	-0.916	0.363	0.110
	3.05	0.70			3.23	0.70	-0.819	0.416	0.101

Table 12.

*Comparisons of scores between family medicine, non-surgical, and surgical residents*

Variables	Family Medicine		Non-Surgical		Surgical		<i>t</i> Test	<i>p</i> Value	<i>effect size r</i>
	Mean	SD	Mean	SD	Mean	SD			
Stress	19.15	6.50	19.45	5.97			-0.174	0.862	0.024
			19.45	5.97	20.22	5.01	-0.463	0.645	0.066
	19.15	6.50			20.22	5.01	-0.567	0.574	0.094
Self-compassion	3.19	0.88	2.87	0.64			1.559	0.125	0.213
			2.87	0.64	2.87	0.65	-0.022	0.982	0.003
	3.19	0.88			2.87	0.65	1.266	0.214	0.206
Self-care	3.05	0.55	3.08	0.77			-0.131	0.896	0.018
			3.08	0.77	3.13	0.55	-0.226	0.822	0.032
	3.05	0.55			3.13	0.55	-0.370	0.714	0.062

attending physicians approached only a moderate effect size,  $r = 0.28$ . The effect size for all other calculations indicated no (or small) effect sizes.

#### 4.3.5 Non-Parametric Correlations

As self-compassion for all respondents and medical students did not meet the assumption of normality, a non-parametric test was used to compare stress and self-compassion for all individuals and for medical students to residents and attending physicians. Kendall's tau was used to assess the correlation between stress and self-compassion both for the entire population and for medical students. Kendall's tau, while not as popular as Spearman's coefficient, appears

to be more accurate, especially when the population is small and has multiple tied ranks (Field, 2009). According to Laerd Statistics (2013), two assumptions must be met to use Kendall's tau. The first is that the two variables being measured be continuous or ordinal variables. Since both stress and self-compassion are continuous variables in this study, the first assumption is met. The second assumption is that the variables share a monotonic relationship. A preliminary graph of stress and self-compassion indicated a linear, negative relationship, satisfying the second assumption. Using Kendall's tau, there is a moderately strong, statistically significant, negative relationship between stress and self-compassion for the entire data set,  $T_b = -0.410, p < 0.00$ . A slightly stronger, negative, statistically significant relationship was found between stress and self-compassion in medical students  $T_b = -0.478, p < 0.00$ .

To measure the difference in self-compassion between medical students, and residents and attending physicians, the Kruskal Wallis test was used. The test was chosen with the assistance of the Pallant (2013) SPSS Survival Manual. The Kruskal Wallis is used to measure the differences in a continuous variable across a categorical variable of at least three, in this case, self-compassion and population category respectively. The differences in self-compassion were not statistically significant between medical students, residents and attending physicians,  $H(2) = 2.67, p > 0.05$ . The lack of statistically significant findings is supported by the previously conducted parametric tests that also indicated no statistically significant findings.

#### 4.3.6 Regression Analysis

Regression analysis was conducted to determine how much the level of self-compassion accounted for the level of stress in each population. According to Field (2009), the  $r^2$  reports the percentage of variance in stress that is accounted for by self-compassion in the population in question, while the adjusted  $r^2$  reports the predictive power this model has when generalized to similar populations. For this reason, both the  $r^2$  and the adjusted  $r^2$  are reported here. Further, multiple regressions were conducted to determine how much of the variance in stress relates to gender, population category, or medical specialty.

For many of the populations, the adjusted  $r^2$  was similar to the  $r^2$  indicating strong generalizability. In the total population, self-compassion accounted for almost 30% of the variance in stress,  $r^2 = 0.295, F(1, 121) = 50.609, p < 0.00$  (regression analysis data is provided in Table 13). This result was similar in females,  $r^2 = 0.300, F(1, 67) = 28.710, p < 0.00$  and males,  $r^2 = 0.325, F(1, 51) = 24.512, p < 0.00$ . Forty three percent of the variance in stress was

accounted for by self-compassion in medical students,  $r^2 = 0.430$ ,  $F(1, 50) = 37.704$ ,  $p < 0.00$ . Self-compassion's predictive ability on stress decreased for residents and attending physicians. Self-compassion only accounted for 27% of the variance in stress for residents,  $r^2 = 0.267$ ,  $F(1, 54) = 19.622$ ,  $p < 0.00$  and did not account for the variance in stress for attending physicians,  $r^2 = 0.001$ ,  $F(1, 13) = 0.008$ ,  $p > 0.05$ . As indicated above, this may be due to the limited number of participants in the attending physician category. The lack of predictive power in the attending physician category was matched in the non-surgical specialty category,  $r^2 = 0.064$ ,  $F(1, 31) = 2.107$ ,  $p > 0.05$ .

Table 13.

*Regression analysis for self-compassion and stress*

	$r^2$	Adjusted $r^2$	$F$	$P$
Total	0.295	0.289	50.609	0.000
Female	0.300	0.290	28.710	0.000
Male	0.325	0.311	24.512	0.000
Medical Students	0.430	0.418	37.704	0.000
Medical Residents	0.267	0.253	19.622	0.000
Attending Physicians	0.001	-0.076	0.008	0.928
Family Medicine	0.322	0.284	8.536	0.009
Non-Surgical Specialty	0.064	0.033	2.107	0.157
Surgical Specialty	0.466	0.433	13.980	0.002

For those in family medicine, self-compassion accounted for 32% of the variance in stress,  $r^2 = 0.322$ ,  $F(1, 18) = 8.536$ ,  $p < 0.01$ . Finally, for those in a surgical specialty, self-compassion accounted for almost half of the variance in stress,  $r^2 = 0.466$ ,  $F(1, 16) = 13.980$ ,  $p < 0.01$ .

Multiple regressions indicate that self-compassion, gender, population category, and medical specialty combined accounted for 31% of the variance in stress,  $r^2 = 0.311$ ,  $F(4, 118) = 13.341$ ,  $p < 0.00$ . The multiple regression analysis results suggest that gender, population category, and medical specialty do not have much predictive power for stress.

#### 4.4 Summary

Multiple statistically significant correlations were found between stress and self-compassion as assumed. Surprisingly, statistically significant correlations were not found

between stress and self-compassion in attending physicians and those in a non-surgical specialty. Where the correlation was statistically significant, regression analysis showed that self-compassion accounted for up to 47% of the variance in stress. Gender, population category, and medical specialty did not hold predictive power over stress. More surprisingly, there was only one statistically significant difference in one of the measured variables: stress between residents and attending physicians, with residents showing higher levels of stress.

## 5. DISCUSSION

This final chapter will discuss the study results and their implications. Next, the limitations of the study will be discussed. Finally, suggestions for future research will be proposed.

### 5.1 Summary of Findings

High levels of stress appear to be a negative consequence of medical training and practice, as shown in the existing literature. This study has shown that similar to previous findings, stress in Saskatchewan physicians is high when compared to the general population (Cohen & Janicki-Deverts, 2012; Rahimi et al., 2014) and more concerning, high when compared to previously studied physician populations (Newsome et al., 2012; Rac et al., 2014; Rahimi et al., 2014). Where the findings of this study differ, is in the lack of a statistically significant difference in stress levels between males and females. In fact, the only statistically significant difference in stress was between residents and attending physicians. Despite the limited response rate for attending physicians, the effect size for the difference in stress between residents and attending physicians approached a moderate size, which suggests the results are reliable even if all other differences were not statistically significant. Regardless of a lack of statistical significance, the mean level of stress is higher in females compared to males. This difference supports previous research that indicates females experience higher levels of stress than males. Attending physicians showed the lowest level of stress followed by medical students and then by residents. These results may suggest that while the practice (attending physicians) and training (medical students) of medicine is stressful, combining both training and practice of medicine (residents) results in the highest levels of stress. Finally, those in family medicine showed the lowest level of stress followed by those in a non-surgical specialty and then by those in a surgical specialty. This researcher has often heard from members in the medical community that they chose family medicine because of the anticipated lack of stress, or that they did not choose a surgical specialty because of the anticipated abundance of stress. The findings in this study support this assumption in the community. Those in a surgical specialty reported the highest mean stress level while attending physicians reported the lowest mean stress level. It

stands to reason that focused effort into reducing the experience of stress for those in a surgical specialty especially would be beneficial. Given the harmful effects of stressed physicians on the users of the medical system, highly stressed surgeons could have a devastating impact.

This study's aim was to not only assess the level of stress in Saskatchewan physicians, but also compare them to the level of self-compassion. The 123 responses, while not exhaustive, were adequate to make a statement; stress and self-compassion are statistically significantly correlated in Saskatchewan physicians. This finding was expected. The statistically significant, strong, negative correlation between stress and self-compassion was not only present when all groups were collapsed, but also present for females, males, medical students, residents, those in family medicine, and those in a surgical specialty. Further, self-compassion accounted for roughly 30% of the variance in stress for males and females and the entire data set when the categories were collapsed. More interesting was the lack of statistically significant findings between stress and self-compassion for attending physicians and those in a non-surgical specialty. Despite attending physicians reporting the lowest levels of stress and the highest levels of self-compassion for all groups in this study, self-compassion accounted for less than 1% of the variance in stress for attending physicians. These results are counter-intuitive to the drive of this study: to investigate self-compassion as a potential mediator for the experience of stress.

Explanations for the lack of statistically significant findings are plenty. One hypothesis is that medical students and residents have limited control over their schedule and quantity of work. Whereas attending physicians can dictate their schedule to the degree that they can choose where and for whom they work, in turn allowing them to dictate their schedule, how many days or hours per week they work. This would suggest that self-compassion has a greater effect on stress in situations where stress is a product of uncontrollable events. Response bias may be a possible cause of the lack of statistically significant findings for those in a non-surgical specialty. During one recruitment session with one group of non-surgical residents, this researcher was introduced as a relative of a local physician, known to the residents. This possibility will be discussed further in the limitations section.

Unexpectedly, there were no statistically significant differences in level of self-compassion between groups. Similar to the findings from previous studies, the mean level of self-compassion in females is lower than males. This may suggest that females are tougher toward themselves, are not as mindful as, or feel more alone, than males. In turn, these findings



may point to a larger systemic cultural concern between genders. Attending physicians have higher levels of self-compassion compared to residents and medical students. While this study did not investigate the reasons behind the results, age is known to play a role in level of self-compassion and could be a confounding variable for these results. Those in a family medicine program have higher levels of self-compassion compared to those in a surgical and non-surgical program. It is unclear if those with higher levels of self-compassion choose a medical discipline that is expected to produce lower levels of stress respectively, or if the program itself affects the physician's level of self-compassion. Regardless of the findings, there are a variety of elements that may be affecting a physician's level of self-compassion.

These findings suggest that a focus on self-compassion as early as possible, such as during medical school, could benefit everyone, especially given that self-compassion in medical students accounts for 43% of the variance in stress. Further, additional training in self-compassion during surgical residency programs would be helpful given that self-compassion accounts for 47% of the variance in stress for those in a surgical specialty. Comments from participants included: "my answers have been impacted [by] my ability to cope with the loss of a loved one", "The past month had been rough", and "Shitty month. Confounded by multiple family members passing." With the extensive time requirements of medical students and residents, managing regular traumatic life events such as death may become impossible. In support of the differing responses between family medicine, non-surgical specialists, and surgical specialists, one participant said that their responses were "[very] rotation [dependent]." The comments provided supports the above assertion that self-compassion may be impacted by multiple elements that seem to include: work environment, quantity of work, and quality of the situation.

While self-compassion is a relatively new concept to be researched, Neff's (2003b) original research demonstrates that the tool used to measure the phenomenon does indeed measure self-compassion and holds good convergent validity, construct validity, content validity, test-retest reliability. Further, she showed that self-compassion and self-esteem are different constructs (Neff, 2003b). Self-worth is more stable when driven by self-compassion instead of self-esteem (Neff et al., 2007). Self-compassion has been shown to mediate the relationship between self-esteem and mental health (Marshall et al., 2015) and can actually cause changes in an individual's well-being (Zessin et al., 2015). Well-being can be impacted by stress, and well-

being can dictate a physician's ability to provide quality medical care (Shanafelt et al., 2002). Research has begun on one component of self-compassion (mindfulness) and has been shown to reliably decrease stress (Newsome et al., 2012; Raab, 2014; Rac et al., 2016; Shapiro et al., 2005). More research on self-compassion as a whole is warranted to provide more support for it as a whole and its positive impact on stress in particular.

Responses on the self-care measure included some interesting findings. The highest rated domain was the intellectual domain with attending physicians holding the highest possible mode score of 5. In fact this was the only instance for the participants of this study that the mode score was 5. Those in family medicine rated their intellectual domain as 3, while all other population categories had a mode score of 4. The high scores on the intellectual domain may make sense given the higher education required for the practice of medicine. The lowest rated domain was the physical domain with attending physicians, along with those in family medicine, and a surgical specialty reporting the lowest possible mode score of 1. Those in a non-surgical specialty reported a mode score of 3 while all other population categories reported a mode score of 2. The only other domain to reflect a low mode score of 1 was that of spirituality reported by attending physicians. Given that a score of 1 equals *needs work*, and 5 equals *excellent form*, anything below the half way mark of 3 may be of concern. With this assumption, it appears that individuals in all of the population categories in this study believe they are adequately taking care of the majority of their domains of self. This may signify that high stress levels can be a result of challenges in just one domain. A low score in one domain should therefore be a concern. It is also possible that individuals are not connecting their stress with their domains of self.

While this study hopes to identify a mechanism to mitigate the negative experience of stress, this mechanism would only be a band aid. The problem is larger and more systemic. As one respondent noted:

Overall the lack of control is distressing as a medical student. Anytime a legitimate issue is brought up to staff/admin the general response is something along the lines of "welcome to the life of medicine" in place of a mature two-way discussion about the issue. In any other profession this would be unacceptable.

The distressing lack of control as identified by this student is concerning since a lack of control over one's work is known to lead to burnout (Gabbe et al., 2008). Further, the response provided

when concerns were identified suggests that issues within medicine are not supposed to be resolved, but expected and accepted. A second participant echoed this sentiment when they stated:

I have seen a lot of work on physician wellness come and go and frankly I am weary of it. People keep telling me to take a workshop, improve self care, consider more CME on wellness when the real problem is elsewhere. My workload exceeds my available time and energy. For all the talk on physician wellness I \*\* never \*\* hear anyone say; you can teach less, skip on research, work less clinical shifts, we will take stuff out of the curriculum / or simplify it. As a colleague said to me when we were asked to go to yet another meeting on inter-professional collaboration and he quipped “you can start putting more things on my plate just as soon as you take something off of it”.

It appears that feeling overwhelmed and out of control is to be expected and is normalized within medicine suggesting that those in power believe the stress of medical school is a rite of passage and only those who survive it are worthy of the badge of honour to practice medicine. What this researcher finds most distressing is that this perspective is fostered in physicians before they ever enter professional practice. As one student reported: “how could you possibly make med school less stressful? So what's the point of researching our unhappiness?” This perspective speaks to how large and systemic the problem of stress is. Does the training of medicine need to take longer to allow time to learn at a slower pace and maximize personal health and wellbeing? Some professors suggest that if more time is provided during medical school, those in the upper echelons of medicine who structure programming will start to add courses and increase expectations. This one suggestion promotes the need to create change within the culture of medicine to decrease the acceptance of stress. Current medical students and residents report that the culture of medicine is changing but at a very slow pace. Increasing the level of self-compassion in physicians can increase their concept of common humanity. This could result in supervising physicians identifying more with the struggles of medical school and residency allowing for greater empathy and support thereby moving change at a faster pace than is currently being seen. Residents are working an average of 75 hours per week, give or take 16 hours (Cohen & Patten, 2005), almost twice the standard 40-hour work week. Cutting back on the weekly working hours of residents may extend the residency period, however, research cited in this paper indicates that a lack of sleep can result in a diminished capacity for learning and

increased medical errors (see also: Girard & Hickam, 1991; Landrigan et al., 2004). At the very least, this additional time may produce better physicians.

Making changes directly to medical training programs can be beneficial. However, without systemic changes to the culture of medicine and the structure of medical education, any attempts to decrease or address the stress created within medicine may fall flat.

## 5.2 Limitations of the Study

There are multiple limitations that should be identified in this study. First the low response rate, specifically within the attending physician and surgical specialist populations, may have impacted the findings. Further, this researcher was introduced as Dr. Smith's<sup>1</sup> family member during one recruitment session for non-surgical specialists. This familiarization may have impacted the data collected from some of the non-surgical residents. Response bias may have artificially increased or decreased their scores. Data collection was completed from September to November. The medical school term begins in September. Depending on when students responded, stress levels may have been lower in September, or higher in November as exams approached. Stress may also fluctuate depending on the specific nature of the content being learned at the time they completed the survey. Residency begins during the summer and stress may fluctuate given the specific rotation the resident is on. Some rotations require travel, which may also impact stress in either direction. In September, attending physicians may have recently returned from summer vacations and could be reporting much lower levels of stress when compared to other times of the year. Recruitment of participants was conducted both via online appeal, as well as in person. The different modalities for recruitment may have impacted the responses collected. Finally, due to the connections this researcher has within the medical community, attending physician responses may have been affected while it is hard to say how.

Lastly, the alpha level for all tests was not adjusted for multiple comparisons due to the different data sets being used in each comparison. The lack of statistical significance achieved when alpha was set at .05 would preclude using a more restricted alpha level to account for the multiple comparisons between groups. Therefore the need for further exploration with appropriate post hoc testing was not viewed as necessary. It is recognized, however, that family

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<sup>1</sup> Name has been changed to protect personal identity.

wise error rates do exist. As such post hoc tests such as a Bonferonni Correction could be conducted to evaluate the potential for this form of measurement error in those isolated cases where this may have impacted results.

### 5.3 Suggestions for Future Research

Future research is warranted on self-compassion as a concept, as well as on various programs designed to increase self-compassion as a whole in the medical setting. This includes medical school, residency programs, and public/private practice. Implementation of the full 8-week Mindfulness Based Stress Reduction program instead of the alternate, shortened version the University of Saskatchewan previously used may be a start to determine if length of program affects the outcome within the Saskatchewan physician population. Further, implementing the 8-week Mindful Self-Compassion program (the standard program to increase self-compassion) and assessing the difference in results between targeting one component of self-compassion versus self-compassion as a whole could be enlightening. Expanding the program to include residents and attending physicians might benefit all physicians in the long run. Additionally, the barriers to self-compassion inherent with in the medical structure deserve to be assessed and alternatives sourced not only in public/private practice, but within the context of physician training. These could include a decreased course load in medical school, decreased work hour expectations during residency and decreased barriers and stigma to access support. Decreasing the course load in medical school could be achieved in a few ways, including increasing the time to complete medical school or decreasing the course requirements. As indicated above, either of these options may not produce the desired results without first altering the current culture of medicine. Medical school often breaks during the summer. A possible solution may be to remove the summer vacation period and post pone some classes until summer time. This would allow for a slower pace of learning throughout the year, maintain the current duration of medical school, and prevent the academic loss often seem following summer vacation (Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996). Decreasing the weekly work hours for residents was discussed above. The decrease may result in a longer residency period. It may also, however, produce better physicians who learn and retain more whilst making fewer medical errors. Decreasing the barriers and stigma to accessing mental health support is a concern that extends beyond medicine. Within the medical culture, physicians are often required to disclose if they have previously accessed mental health support when applying for employment within a new health

region, which may preclude them from being considered for the position. The cultural ideation of physicians as saviors or miracle workers may also support the expectation within the profession that physicians should be super human and should not need mental health support, indeed that they may be unfit for employment if they have been mentally ill.

Nurses and physicians work within the same culture and structure; however, popular culture only discusses the stress of physicians and not the stress of nurses. When comparing nursing school and medical school, as explained by friends and family, the focus on self-care within medical school is limited to a course or two, which are not mandatory, and are poorly attended without consequence. Within nursing, self-care is a mandatory theme that is interwoven throughout the entire nursing school experience. Historically the relationship between nurses and physicians may be a contentious one, nonetheless, medical school may want to review the structure and culture of nursing school and learn from their experience. The common theme continues to be the culture of medicine and how it needs to accept and encourage more empathy, understanding, and support for its members.

A replication of Rahimi et al.'s (2014) study on stress and resilience in U of S medical students could be conducted after implementing the Mindful Self-Compassion program. Since medical students have lower levels of resilience than the general population (Rahimi et al., 2014) and self-compassion has been shown to not only increase well-being, but resilience as well (Neff, 2003b; Olson, Kemper, & Mahan, 2015), implementing programs to increase self-compassion will increase resilience allowing for better stress management in future. This research could then in theory be expanded to include residents and attending physicians.

Finally, additional research may be interesting on the self-care scale used in this study to promote its reliability and validity. As an example, the self-care measure could be used at a specific time of year on medical students for a number of years to determine if the results are similar from year to year thus boosting the reliability of the measure. In addition, the measure could ask participants to identify three things they currently engage in to maintain each domain of self, and three things they may want to engage in to maintain each domain of self. Assessing themes or consistent answers may provide validity for each domain of self being measured.

#### 5.4 Conclusion

This study has shown that stress in Saskatchewan physicians is high. Further, the high level of stress found can have significant negative impact on the physicians, their families,

patients, and the medical system itself (Firth-Cozens & Greenhalgh, 1997; Shanafelt, Bradley, Wlpl, & Back, 2002). Self-compassion is an effective framework in some populations from which to increase resiliency and manage stress. One of the disheartening findings is that medical students and residents are well versed in the experience of stress. They believe this has been identified multiple times, with no resolution. Perhaps it is the prestige of the position, the thrill of being called *Doctor*, family expectations, or simply the desire to heal that draws individuals to the medical profession. Regardless of why an individual enters medical training, once there, many regret their choice: 22% of Alberta residents would not chose medicine as a career if they had the chance to remake their decision, and 14% would chose a different specialty program (Cohen & Patten, 2005). The theoretical experience of stress seems to differ considerably from the actual experience once in the profession. The lack of hope for change heard in the participant comments is disheartening. This study has shown that stress is at higher rates within the physician population. Further stress negatively impacts one's well-being. With suicide rates higher than the general population (70% for male physicians and 250% - 400% for female physicians (Hampton, 2005)), it is hard to ignore elements that contribute to a decline in the health of physicians. As the Canadian literature increases to show the experience of stress within physicians, action needs to be taken to decrease the systemic factors involved in the experience of stress within Canadian, and specifically Saskatchewan, physicians. Without action, high stress levels will persist within the physician population contributing to decreased well-being for physicians and their families (Hull et al., 2008; Toews et al., 1993; Toews et al., 1997; Wilkins, 2007), impairment of patient care and preventable medical errors will continue to occur (Firth-Cozens & Greenhalgh, 1997; Landrigan et al., 2004), and suicide rates will conceivably remain catastrophically high.

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**Department of Education  
University of Saskatchewan**



**Complete the survey and enter the multiple draws for free coffee.**

**Earlier completion of the survey = more chances to win!**

We are looking for medical students, residents, and attending physicians to take part in a study on physician wellness. Stress, self-compassion, and self-care will be investigated to look at potential mediators of stress.

As participants in this study, you will be asked to take part in an **9.5 minute, online** survey.

Log in here to complete the survey:

<https://fluidsurveys.usask.ca/s/PhysicianWellness>

For more information about this study, please contact Erin Magee,  
College of Education at [erin.magee@usask.ca](mailto:erin.magee@usask.ca)

This study has been reviewed by, and received approval through the  
Research Ethics Office, University of Saskatchewan on August 12, 2016

## APPENDIX B

Incentive Draw - 0%

<https://fluidsurveys.usask.ca/surveys/erinmagee/incentive-draw/?pre...>



### Incentive Draw

Thank you for participating in the Physician Wellness research study. Please indicate if you should be in the student or resident draw.

- ☐ Medical student
- ☐ Resident

Please provide your email address to be entered into the weekly draw. Your email will never be attached to the answers you have provided.

Type here

Submit







## Physician Wellness

0%

### INFORMED CONSENT

You are invited to participate in a research study entitled: *Physician Wellness: The Role of Self-Compassion and Self-Care on Stress in Saskatchewan Medical Students and Physicians*

**Researcher:** Erin Magee, B.Sc., Graduate Student, College of Education, Educational Psychology, University of Saskatchewan, [erin.magee@usask.ca](mailto:erin.magee@usask.ca)

**Supervisor:** Dr. Tim Claypool, Department of Educational Psychology and Special Education, College of Education, University of Saskatchewan, [tim.claypool@usask.ca](mailto:tim.claypool@usask.ca), 306-966-6931.

**Purpose of Research:** High stress levels have been identified as a concern. Further, stress in the physician population is often higher than the general population. I will be investigating stress, self-care and self-compassion in Saskatchewan physicians at multiple stages of their career (student, resident, and attending physician).

**Procedure:** Data will be collected using three short measures of stress, self-compassion, and self-care. The survey should take approximately 10 minutes to complete. Participants may answer only those questions with which they are comfortable.

**Potential Risks:** As with any online related activity the risk of breach of confidentiality is possible. There is a low risk of emotional, and/or psychological stress, due to the nature of the questions. You will be asked to recall past stressful experiences during this questionnaire. Should your participation in this research study evoke troubling or distressing feelings please seek assistance.

Possible resources may include:

U of S Student Counselling Services: <https://students.usask.ca/health/centres/counselling-services.php>

Saskatchewan Physician Health Program: <https://sma.sk.ca/programs/44/physician-health-program.html>  
ePhysicianHealth.com

**Potential Benefits:** To identify potential methods to better support Saskatchewan physicians and their families throughout their career.

**Compensation:** 10 x \$5 gift cards will be awarded via a weekly draw for medical students. 10 x \$5 gift cards will be awarded via a weekly draw for residents. Two draws for each demographic will be completed per week for a total of five weeks. The earlier you complete the survey, the more chances you will have in receiving a gift card. Following completion of the survey, you will be given the opportunity to be redirected to a separate survey where you can provide an email address which will be entered into the draw. The email address you provide can and will not be connected to the responses you provide in this survey. The first draw will be the first Friday after 20 participant responses have been received.

**Confidentiality:** The data from this research project will be published and presented at conferences in aggregate form. No identifying information will be collected during this survey. Fluidsurveys holds

the collected data on Canadian surveys and the researcher and supervisor will be the only individuals with access to the data. When the data is no longer required, my fluids survey data will be deleted. Please see the following for more information on Fluid Survey Data Privacy in Canada:  
<http://fluidsurveys.com/canada/data-privacy-canada/>

**Right to Withdraw:** Participation is voluntary and you may decline to answer individual questions or opt out of the survey at any time. Your right to withdraw from this survey will apply until you complete and submit this survey.

**Follow Up:** To obtain results from the study, please email the researcher at the above provided email address. A copy of the final study will be provided to the University of Saskatchewan's College of Medicine.

**Questions or Concerns:** Contact the researcher using the information provided at the top. This research project was reviewed and approved on ethical grounds by the University of Saskatchewan's Behavioural Research Ethics Board on *(date)*. Any questions regarding your rights as a participant may be addressed to the Research Ethics Office toll free at 1-888-966-2975, 306-966-2975, or [ethics.office@usask.ca](mailto:ethics.office@usask.ca).

**Consent:** By completing and submitting this questionnaire, **YOUR FREE AND INFORMED CONSENT IS IMPLIED** and indicates that you understand the above conditions of participation in this study.

I sincerely thank you for taking the time to participate in this research study.

Next



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## Physician Wellness

11%

I am:

Who is a:

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## Physician Wellness

22%

### MEDICAL STUDENTS

Please indicate what year of medical school you are current in:

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## Physician Wellness

33%

### RESIDENTS

Please indicate the year of residency you are currently in:

Please indicate the training you are pursuing:

Do you teach medical students and / or residents?

Yes

No

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## Physician Wellness

44%

### ATTENDING PHYSICIANS

Please indicate the area of medicine you practice:

Do you teach medical students and / or residents?

Yes

No

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## Physician Wellness

55%

### Stress

The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, please indicate your response by clicking in the circle representing HOW OFTEN you felt or thought a certain way.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
1. In the last month, how often have you been upset because of something that happened unexpectedly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. In the last month, how often have you felt that you were unable to control the important things in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. In the last month, how often have you felt nervous and "stressed?"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. In the last month, how often have you felt that things were going your way?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. In the last month, how often have you been able to control irritations in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. In the last month, how often have you felt that you were on top of things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. In the last month, how often have you been angered because of things that were outside your control?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## Physician Wellness

66%

### Self-Compassion

Please read each statement carefully before answering. Indicate how often you behave in the stated manner using the scale of: 1 = Almost NEVER, to 5 = Almost ALWAYS.

	1 Almost Never	2	3	4	5 Almost Always
1. When I fail at something important to me I become consumed by feelings of inadequacy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I try to be understanding and patient towards those aspects of my personality I don't like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. When something painful happens I try to take a balanced view of the situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I try to see my failings as part of the human condition.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. When I'm going through a very hard time, I give myself the caring and tenderness I need.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. When something upsets me I try to keep my emotions in balance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. When I fail at something that's important to me, I tend to feel alone in my failure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I'm disapproving and judgmental about my own flaws and inadequacies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I'm intolerant and impatient towards those aspects of my personality I don't like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## Physician Wellness

77%

### Self-Care

Please rate yourself on each domain of self.

**Intellectual**  
(Stimulate brain, engage mind)  
1 = Needs Work  
5 = Excellent Form

1  5

**Interactional**  
(Socialize with responsive others)  
1 = Needs Work  
5 = Excellent Form

1  5

**Spiritual**  
(Feed your soul)  
1 = Needs Work  
5 = Excellent Form

1  5

**Nutritional**  
(Improve nutritional intake)  
1 = Needs Work  
5 = Excellent Form

1  5

**Emotional**  
(Enhance and explore emotions)  
1 = Needs Work  
5 = Excellent Form

1  5

**Sensual**  
(In touch with your sexuality/senses)  
1 = Needs Work  
5 = Excellent Form

1  5

**Physical**  
(Challenge and care for your body)  
1 = Needs Work  
5 = Excellent Form

1  5

**Contextual**  
(Improve/change your environment)  
1 = Needs Work  
5 = Excellent Form

1  5

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## Physician Wellness

88%

### Comments

Do you wish to provide an email address, unconnected to the responses you just provided, for the incentive draw? You will need a password to access the incentive draw page. The password is THANKYOU

☐ Yes☐ No[Contact](#) [Maps](#) [Search](#) [Disclaimer](#) [Privacy](#)

## APPENDIX D

PSS
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### INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts during **THE LAST MONTH**. In each case, please indicate your response by placing an “X” over the circle representing **HOW OFTEN** you felt or thought a certain way.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
	0	1	2	3	4
1. In the last month, how often have you been upset because of something that happened unexpectedly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. In the last month, how often have you felt that you were unable to control the important things in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. In the last month, how often have you felt nervous and “stressed”?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. In the last month, how often have you felt that things were going your way?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. In the last month, how often have you been able to control irritations in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. In the last month, how often have you felt that you were on top of things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. In the last month, how often have you been angered because of things that were outside your control?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## APPENDIX E

### HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

**Almost  
never**

**1**

**2**

**3**

**4**

**Almost  
always**

**5**

- \_\_\_\_\_ 1. When I fail at something important to me I become consumed by feelings of inadequacy.
- \_\_\_\_\_ 2. I try to be understanding and patient towards those aspects of my personality I don't like.
- \_\_\_\_\_ 3. When something painful happens I try to take a balanced view of the situation.
- \_\_\_\_\_ 4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.
- \_\_\_\_\_ 5. I try to see my failings as part of the human condition.
- \_\_\_\_\_ 6. When I'm going through a very hard time, I give myself the caring and tenderness I need.
- \_\_\_\_\_ 7. When something upsets me I try to keep my emotions in balance.
- \_\_\_\_\_ 8. When I fail at something that's important to me, I tend to feel alone in my failure
- \_\_\_\_\_ 9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.
- \_\_\_\_\_ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
- \_\_\_\_\_ 11. I'm disapproving and judgmental about my own flaws and inadequacies.
- \_\_\_\_\_ 12. I'm intolerant and impatient towards those aspects of my personality I don't like.

## APPENDIX F

### SELF CARE RATING SCALE

According to Virginia Satir, there are 8 domains of the self that need care. Rate yourself on each domain; 1= needs work, 5= excellent form. Anything less than a 3 needs attention. Jot down plans for self care (examples provided).



Laveldanaylor.wordpress.com

Intellectual 1 2 3 4 5

Stimulate the brain, engage the mind

(e.g., read, play games, introspect, learn, debate)

Interactional 1 2 3 4 5

Socialize with responsive others

(e.g., special dinner, family visit, date night, social network)

Emotional 1 2 3 4 5

Enhance and explore emotions

(e.g., watch funny/sad movie, comedy club, enjoy art)

Nutritional 1 2 3 4 5

Improve nutritional intake

(e.g., watch calories, reduce sugar, or eat something new )

Sensual 1 2 3 4 5

Get in touch with your sexuality and senses

(e.g., light candles, play music, dress differently, massage, orgasm)

Spiritual 1 2 3 4 5

Feed your 'soul' (not necessarily religious)

(e.g., meditate, sing, dance, nature walk, create something)

Physical 1 2 3 4 5

Challenge and care for your body

(e.g., exercise, dance, garden, take a class, rest or sleep)

Contextual 1 2 3 4 5

Improve or change your environment

(e.g., clean, repair, plant, or change something, visit somewhere)